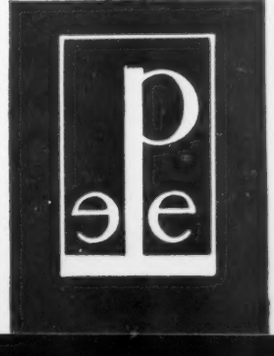
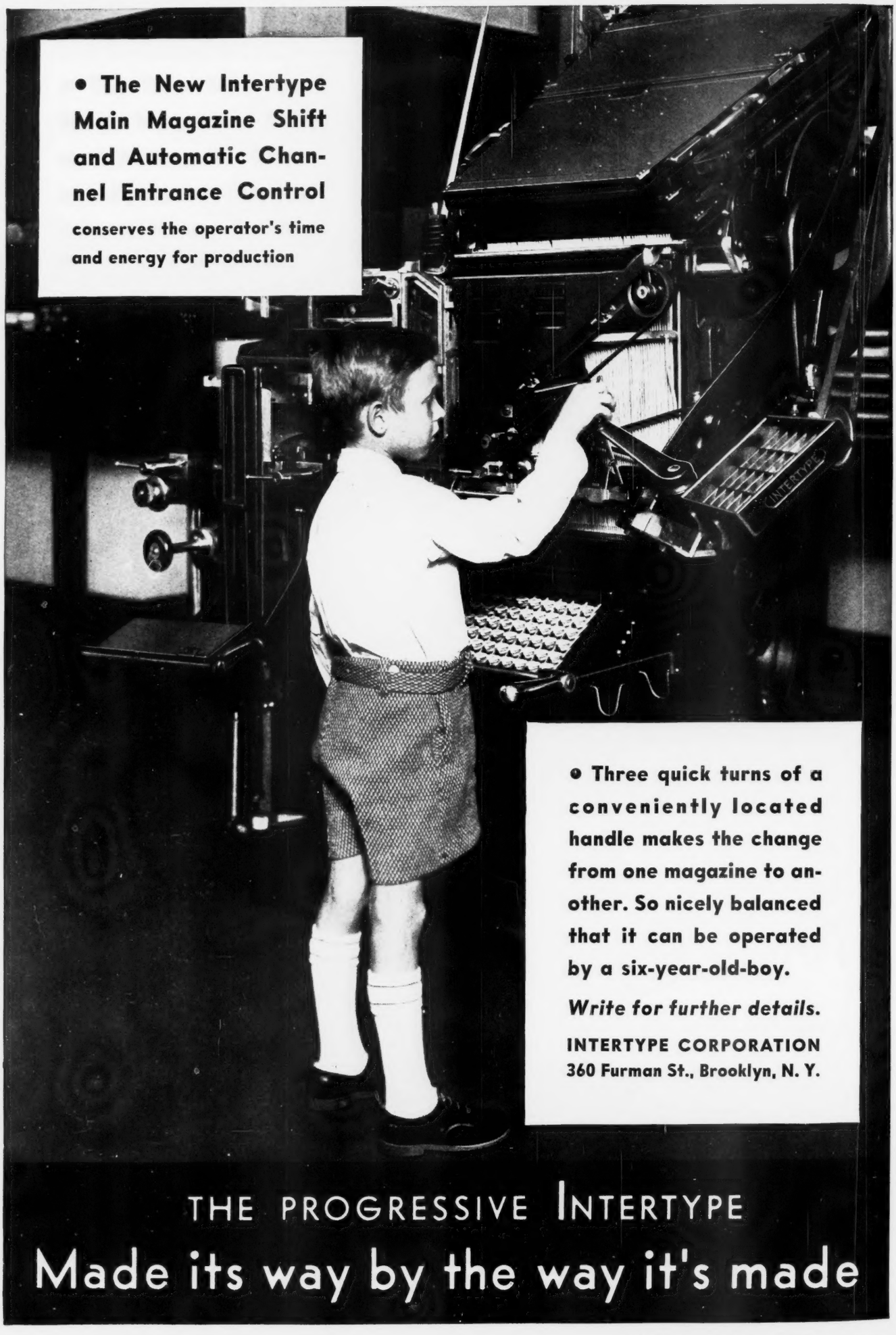
PRINTING EQUIPMENT ENGINEER



Edited for those concerned with the use and care of Printing Equipment

JULY
1931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PRINTING EQUIPMENT ENGINEER

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☐ *Foreman Lithographing Department*

☐ *Bindery Foreman*

☐ *Production Manager*

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☐ *Purchasing Agent*

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"Contrast Provides VISIBILITY"

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April 17, 1931.

Mr. C. Yewdall, Secy-Treas.,
Matrix Contrast Corporation,
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Dear Mr. Yewdall:

It is unusual for me to make any statements concerning products used in our composing room, but consider that so worthy a one as your own is deserving of personal commendation.

In my estimation the Black and White system is a marked asset to any modern composing room for the following reasons:

It is efficient—in its visibility and tendency to increase accurate composition.

It is humane—in lessening the eye-strain of the operator.

It is reliable—in its force of competent, ever ready and willing service department.

Ask the operator who uses contrast matrices to operate a machine under the old conditions. His answer will be most convincing, that I assure you.

GEORGE G. COOPER.

Chief Machinist,
Rochester Times Union & Democrat Chronicle.

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33 West 42nd Street, New York

PRINTING
EQUIPMENT
ENGINEER
July, 1931

Printing Industry the Best Barometer

By Edward Pierce Hulse*

The parable of the foolish virgins has its application in hard business as well as in religion. The time to oil up is when machinery is idle. The time to get all set for steady business and long press runs is when there isn't so much of it in sight. It's a poor time to look over the plant and check up on the equipment when all the composing machines and the paper cutters and the presses and the folders are running to capacity and shaking the building with their vibration.

But, of course, all of us are convinced that business is so dead that it never will revive. And the time the fox bit the man was when he was turning it over just to show dead it was. Just when we have all settled into the belief that the banker is the meanest skate of a turncoat friend and that the constable has got us, is when we want to cock our ear to hear the customer at the doorbell. It (the depression) will end—just as the farmer proved that the long rain would stop—it always has.

The business world in general keeps its eye on the iron and steel business as the barometer of trade. But that's not the best barometer. The printing business is the best barometer of general business—particularly on the revivals and the slumps. A long time before the railroads and the skyscraper builders and the automobile manufacturers are writing out the orders for steel rails and for structural steel and for plates and shapes the printing business begins to feel the first stirring as indicated by orders for catalogs and sales campaigns and other general printing that indicates that those on the watchtowers of business see the signs of the dawning of a new day in business.

The printing-plant owner has to have the strongest faith of all, for he must goad himself into the belief that some time there will be formed a business procession, that the procession will start soon thereafter, and that he must be in readiness to supply the bass drum.

The writer recalls the last slump and revival. For several years not a printing plant in the country had bought a press or a manufacturing machine of any kind, not even an item of the thousand and one things that make up the small tools and merchandise of the business. All of a sudden the revival came and business took the upward turn, the orders began to come into the shops, the printing must be turned out, and needed articles were ordered from the supply houses. One of the great organizations in the merchandise and supply business was placing orders for the many things handled by its chain of houses over the country. Orders went in for twelve thousand dollars' worth of tweezers, for eighteen thousand dollars' worth of ink knives, a carload of composing sticks, forty thousand benzine cans, etc. The shops that were ready got the business, and the shops that could not have the old presses fixed up or that could not secure needed new ones, along with all the other items of equipment, were not those that made deliveries and that got the new business. It's coming again, just as it did before.

And now is the best time to go over the plant, arrange for better equipment where you know it is needed, change the layout of the plant for speedier and smoother production, fill in the composing-room equipment and supplies, check up on your costs and the facts that form the basis of your estimate blank. Then see that the doorbell has current and that the telephone receiver is on the hook—for the bells will start ringing some day for those who do not have cotton in their ears. Get the oil can ready and have it filled that ye go not down in history as the foolish half of the group that would not believe that the bridegroom of revived business cometh yet again.

*Printing Engineer, New York, N. Y.

William Edwin Rudge

The death of William Edwin Rudge (54) in Mt. Vernon, N. Y., has been announced. He was one of America's foremost printers and was known for his fine book publications. He did some books in collaboration with Bruce Rodgers. Recently he had about finished publication of "The Boswell Papers," which were being published with the cooperation of Col. Isham of New York, who discovered and purchased them after they had been stored for over a century in a house in Ireland. The edition was printed on a large-page scale, and reproductions by the aquatone process were incorporated. Mr. Rudge was especially noted for his aquatone work. It is said that he was one of two people who possessed the secret of this process.

Last October, Mr. Rudge accompanied George W. Jones, eminent English printer, on a several weeks' journey.

Flow Sheets Improve Departmental Arrangement

By MEIRIC K. DUTTON*

IN planning the commercial printing plant, it is necessary that one first know the outline arrangement of the building. It is, of course, preferable that this outline should not be limited by any predetermined building lines. Such, however, can be the case only of suburban plants with unlimited space on which to build. The selection of space within a standing building, either metropolitan or suburban, should, insofar as is possible, take into consideration this preliminary arrangement. In the case of a new building, the construction may be made to conform to all portions of the preliminary arrangements which fit the building site.

The layout of the commercial printing plant, as of any other manufacturing plant, is dependent upon the flow of work in the plant from one operation to the succeeding operation. The most economical sequence of operations is obviously that in which the flow of material and of work is in a straight line, without doubling back or criss-crossing of the flow. To accomplish this result, a flow sheet of material in process is essential.

Flow sheets, like other aids to management, guide the manufacturing department in its effort to produce material at a cost which enables the sales department to sell at a profit. Any tool of management which, under particular conditions, does not operate to this end should be discarded.

The primary purpose of the flow sheet is to establish the relative location of departments within the building lines as set up in the preliminary arrangement. In particular, it is to be noted that the flow sheet is not intended to take the place of a floor-plan layout but is intended as an aid in the future laying out of the plant.

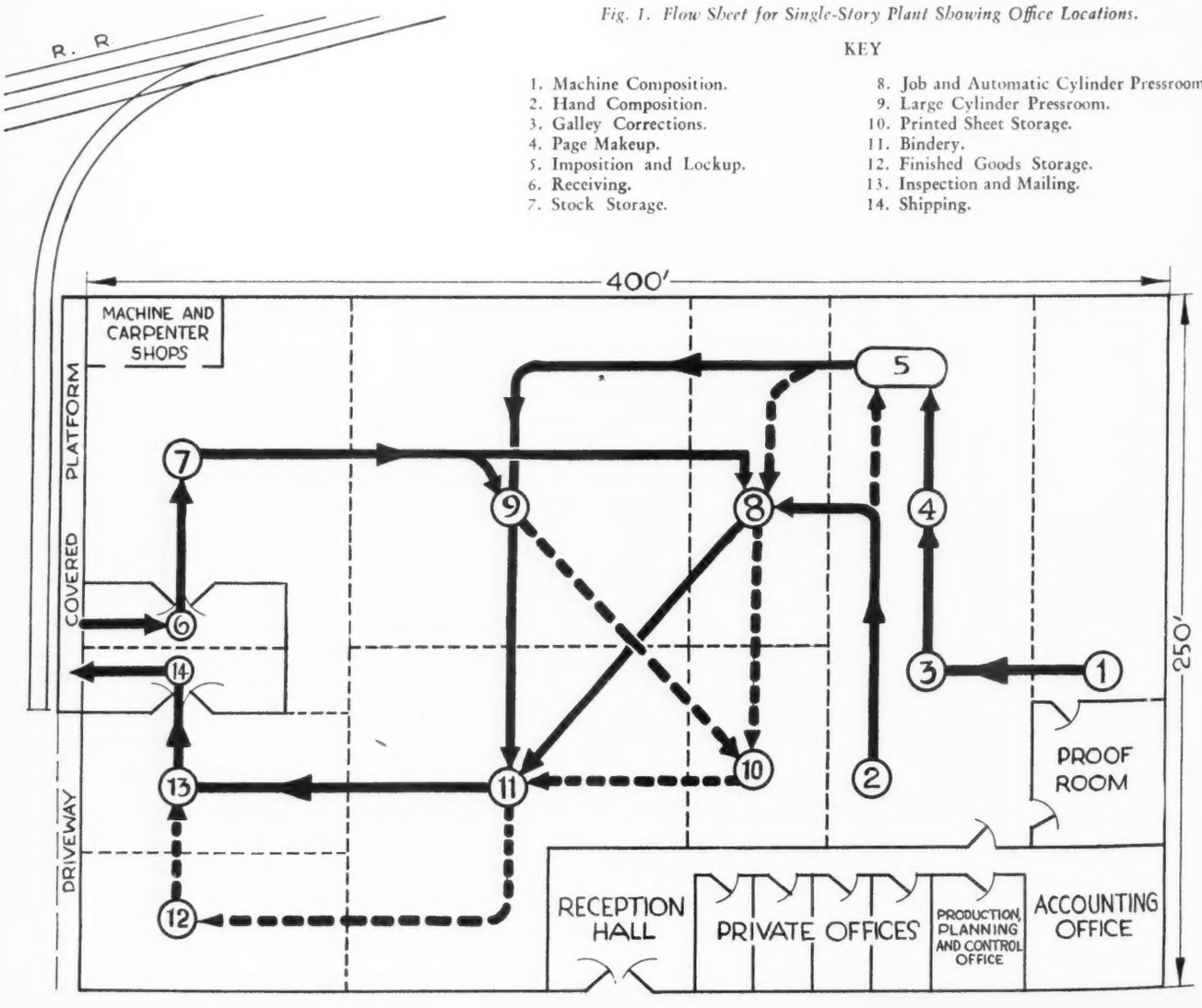
Commercial printing is strictly a departmentalized manufacturing process; that is, each group of similar machines forms a unit rather than each series of dif-

*Consultant in Printing, New York, N. Y.

Fig. 1. Flow Sheet for Single-Story Plant Showing Office Locations.

KEY

1. Machine Composition.
2. Hand Composition.
3. Galley Corrections.
4. Page Makeup.
5. Imposition and Lockup.
6. Receiving.
7. Stock Storage.
8. Job and Automatic Cylinder Pressroom.
9. Large Cylinder Pressroom.
10. Printed Sheet Storage.
11. Bindery.
12. Finished Goods Storage.
13. Inspection and Mailing.
14. Shipping.



ferent machines required to complete a unit of production, as is the case in some more simple manufacturing processes. Due to this fact, the grouping of machines in the commercial printing plant automatically regulates itself.

The determination of the number of machines of each type required in the plant is determined as a result of analyses made by the sales department as to the estimated sales and by the manufacturing department as to the productivity of the equipment. Having this essential information, the available space for each department may be allocated on the flow sheet.

Figs. 1 and 2 illustrate the method to be used in making this division of space to the various departments of a single-story plant in such a manner that criss-crossing and back-tracking of material and work may be avoided. It is, of course, to be recognized that commercial printing plants will vary greatly in the comparative space required by the different departments.

Fig. 1 may be considered as a suitable division of space for the operations of a plant engaged in publication or pamphlet printing, all from type or from type and furnished plates. A plant engaged primarily in the production of printed labels and wrappers, on the other hand, would require only a skeleton composing room and a relatively small bindery but would require the addition of an electrotyping foundry.

Fig. 2 also shows a flow sheet adapted to general commercial printing, including composition, presswork and pamphlet binding, but, in addition, it contains an electrotyping foundry and a pre-makeready department. The two-story front is considered more ornamental that the standard single-story building, the flow sheet differing but little in either case.

It will be noted that in each figure, the proofroom is easy of access from any section of the composing room, that departments and departmental operations follow in succession and that there is a minimum of criss-crossing. Flow sheets should be subjected to the closest scrutiny to be sure that there is no crossing of work and that material will travel the shortest distance

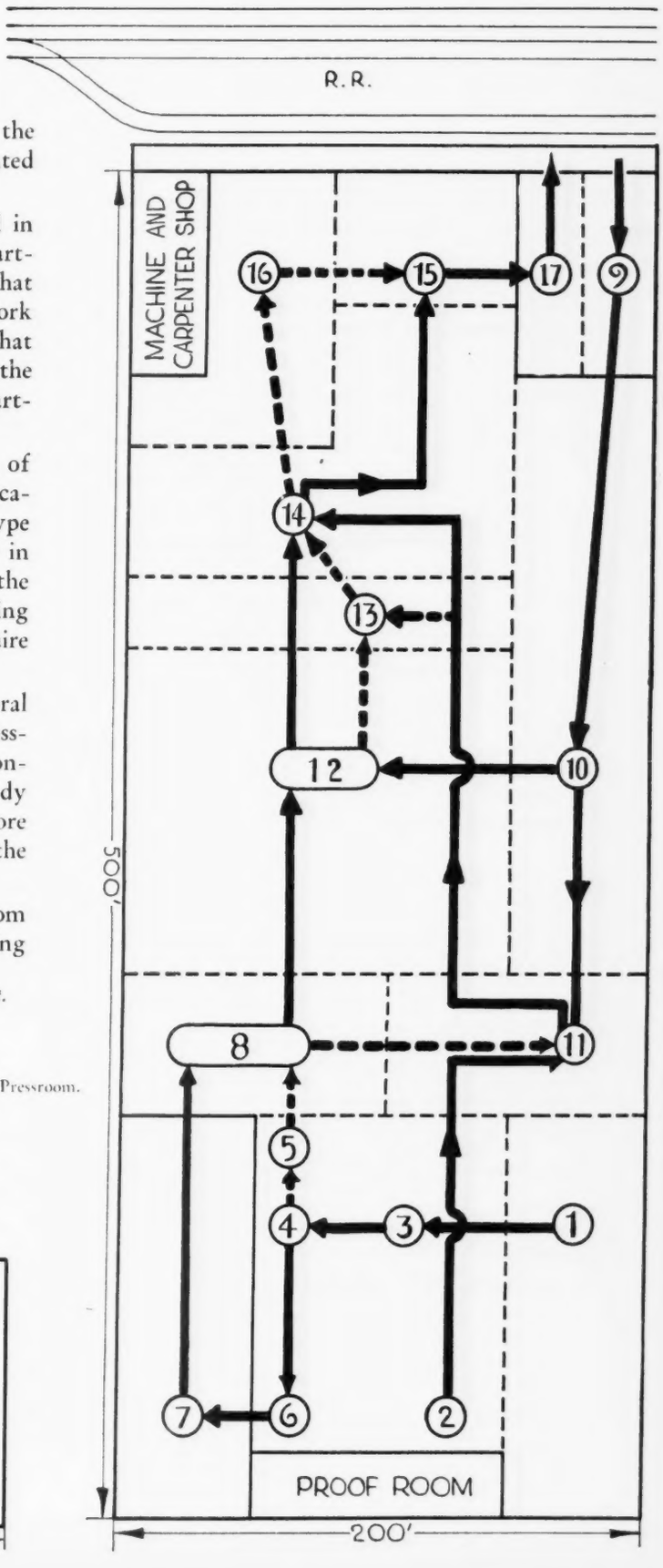
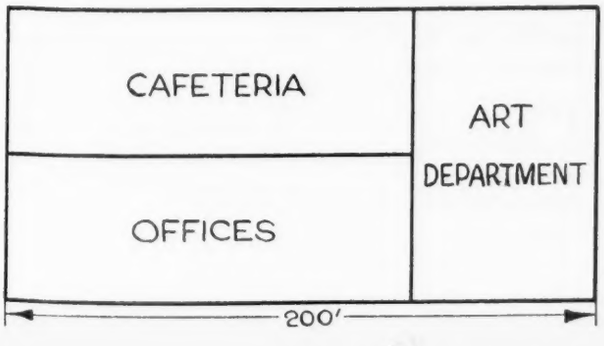


Fig. 2. Flow Sheet for Single-Story Plant with Two-Story Front.

KEY

1. Machine Composition.
2. Hand Composition.
3. Galley Corrections.
4. Page Makeup.
5. Imposition and Lockup.
6. Foundry Lockup.
7. Electrotyping Foundry.
8. Pre-Makeready Department.
9. Receiving.
10. Stock Storage.
11. Job and Automatic Cylinder Pressroom.
12. Large Cylinder Pressroom.
13. Printed Sheet Storage.
14. Bindery.
15. Inspection and Mailing.
16. Finished Goods Storage.
17. Shipping.



possible in arriving at the next successive operation. Having secured such a flow sheet, it will be comparatively easy to arrange the actual floor-plan layout showing the location of each machine and workbench.

In the arrangement of the flow sheets illustrated herewith, it will be recognized that it was necessary to give but scant consideration to lighting and ventilation since the construction of either of the buildings would permit of either saw-tooth or monitor type construction. Multi-story buildings often impose restrictions which further complicate the making of a flow sheet.

Autoplate vs. Junior

Editor,
Printing Equipment Engineer,
Cleveland, Ohio.
Sir:

We have read with interest Mr. Ogden's article, "Speed and Its Problems," in the June issue of PRINTING EQUIPMENT ENGINEER and note particularly the statement that fast-operating Autoplate machines do not produce as sturdy a plate as the Junior Autoplate.

We cannot subscribe to this conclusion as actual physical tests made in our laboratory during the development of the Automatic Autoplate indicated that the Automatic plate was stronger than the standard Junior plate, due primarly to the greater number of ribs and despite the fact that the body of an Automatic plate is 1/32 inch thinner than a Junior plate. Moreover, we have, since the Automatic Autoplate was first introduced, increased the number of ribs, giving added strength to the plate.

It is quite true, as the writer states, that there is a natural tendency for plates to leave the cylinder running at high speed and this tendency increases as the square of the velocity. For example, a plate weighing 50 lbs. on a cylinder running at 200 r.p.m., will exert a centrifugal force of approximately 400 lbs. and this centrifugal force or pull is increased to 2500 lbs. at 500 r.p.m. It is because of this increasing tendency of the plates to lift at higher speeds that we have strongly advocated the use of a 45° rather than a 60° bevel and plate clamps and clips have ample bearing surface on the bevel of the plate.

The statement that printing quality has not suffered on account of increased speed bears out our own conviction and, moreover, many reports we have received from executives of papers who have replaced Junior Autoplate with Automatic Autoplates indicate that the printing from Automatic plates shows marked improvement over that from Junior plates.

Cordially yours,
J. A. ISBELL, *Vice Pres. and Wks. Mgr.,*
Wood Newspaper Machinery Corporation.

Stereotyping and Color Printing

By HENRY P. BOYNTON

The possibilities of printing magazines in colors by means of stereotype plates rests with the present-day stereotypers.

The second convention of the Printing Industries Division of the A. S. M. E. at Washington, D. C., in March, brought out the fact that if as much time had been devoted to the refinement of stereotyping processes as has been devoted to the development of electrotyping, stereotype plates would be vastly superior to the product now being turned out.

The stereotypers of the country have a great opportunity if they will perfect their product so that the results can be compared with electrotypes. It is estimated that about 75% of the commercial printing can be done from stereotypes.

Long runs from chromium-plated stereotypes have no more effect on the stereotype than on the electrotype plate. With the improvements in direct pressure mat molding and the new-faced matrices now on the market, along with the precision machinery for finishing plates, a stereotype could be furnished the pressman which will give positive register for color, or print 120 to 130-line screen halftones without any trouble in the pressroom.

The stereotyping process *should* lower the cost of printing by lessening the time consumed for the production of plates, and therefore should lessen the cost to the user, who would then, no doubt, use more printed matter.

Invents Driformer

A mat dryer aimed to prevent hot spots from appearing directly over the point of heater contact is the latest invention of Tom Lane, superintendent, stereotyping department, *Cincinnati Post*.

This "Driformer," as Lane calls it, is made up as a flat dryer in its present experimental stage. Positive, even heat, conveyed by a liquid which is heated with electrical immersion heaters, eliminates the hot spot problem.

The liquid, which neither burns nor builds up pressure at operating temperature, is merely a heat-carrying medium. Thus, the electric heater heats the liquid, and the liquid transmits the heat directly and evenly to the plate on which the mat dries.

Lane has had the surface temperature up to 500 degrees on tests and reports the heating arrangement has proven successful for several months. He is now experimenting with a cushion lid to hold the mat in pertect contact with the dryer.

Other inventions from Lane's laboratory include a hood for metal casters, a mat trimmer and a screening machine for cuts.

Research Work Improves Newspaper Making

By MAC SINCLAIR

THAT the mechanical side of today's newspaper making is being improved under the influence of "engineering conscious" executives is revealed by the proceedings of the fifth conference of the mechanical department of the A. N. P. A., held in Washington, D. C., June 1, 2 and 3, and by the annual report of Manager Wines, which was released at the A. N. P. A. convention in New York City last April.

The five-year program of the department has developed an organization which demands relief from existing non-standardized mechanisms and methods by means of reports, resolutions and discussions which are the result of thorough analytic research work. Some of these cover the questions of better newspaper printing, better newsprint and ink, better machinery and methods which will make possible the elimination of show-through and strike-through; electrotypes finished within close plus or minus tolerances of 0.105 inch for black-and-white and 0.154 inch for color and magazine work; a resolution was also passed, calling on advertisers and advertising agencies to employ electrotypes instead of mats in newspaper advertising and that if mats must be used, that they be produced under wet mat manufacturing conditions.

One of the important features of the convention was an exhibit at Harding hall of many copies of similar advertisements taken from as many newspapers. The varying printed results of identical advertisements from which the tear sheets were taken caused much surprise and discussion. The display brought home to the delegates in a concrete manner the reasons for complaints from advertisers and agencies with reference to newspaper printing. In order to show what improvement can be accomplished within the coming year, it was unanimously decided that a similar exhibit be arranged for the next convention.

B. L. Wehmhoff, technical director of the Government Printing Office, presented his second progress report on newsprint and news ink at the morning session, Monday, June 1. The report is being published in abstract form in the ENGINEER. Charles F. Hart (New York *Times)*, Lawton A. Dix (New York *News)*, L. B. Palmer (Manager A. N. P. A.), Arthur Burns (New York *Herald-Tribune)*, J. W. Park (Chicago *Tribune)*, J. Edgar Martin (New York *Sun)*, W. E. Wines (Manager of the Mechanical Department and chairman of this session) and others, participating in the discussion, brought out much information on the opacity and absorption qualities of various grades of newsprint, sulphite content of paper, color of paper, ink penetration, the possibilities of a standard color for newsprint, change of color in newsprint while in storage, and the causes of breaks in newsprint while running through the press.

At Monday evening's session (Arthur Burns, chairman), T. F. McPherson, newspaper analyst, presented a paper on composing room costs. Mr. McPherson's paper is also being published in abstract form in the ENGINEER for the benefit of those who were unable to attend the convention.

Mr. McPherson presented in a comparative manner, statistical data covering production costs in the composing rooms of several newspapers. Early in his address he stated:

> Probably in no field of endeavor today is there greater need of a reliable comparative cost system. *Relative efficiency cannot be determined through the process of comparing composing room page costs.* The matter of invisible production, both of news type and invisible display advertising construction, to say nothing of display advertising reconstruction, constitutes too vital an element of the total cost.
>
> Before launching upon the analysis of production volume, it would be fitting to attempt to place the responsibility for rising page and column costs. The conclusion of this writer after twenty years of observation of, and experience in newspaper operations, is that the publishers themselves are in a measure responsible.

Tuesday morning (J. W. Park, chairman), Jackson Townsend, president of the Wood Flong Corporation, gave an extremely frank address on "Problems of Dry Mat Manufacture." This paper revealed some of the difficulties of dry mat making. The limitations of the dry mat should be more fully understood by the user. Mr. Townsend appealed to the association to standardize stereotype foundry practices in order to obtain better results from all brands of dry mats as a whole. If foundrymen will standardize their requirements, dry mat manufacturers will pledge their unstinted efforts to meet those requirements.

Tuesday evening's session (Rudolph E. Lent, business manager, *Jersey Journal*, chairman) was devoted to the report of the joint A. N. P. A. and A. A. A. A. committee on the standard thickness of electrotypes. After discussion, W. V. Cowgill (Cleveland *News)* moved that the thickness of 0.105 inch be adopted for black-and-white and 0.154 inch for magazine and color work. The motion was carried unanimously.

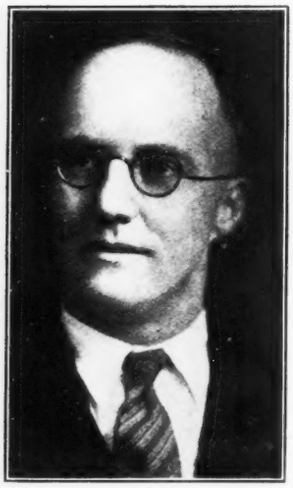
Charles F. Hart (New York *Times)* presided at Wednesday morning's session. F. R. Gamble, executive secretary of the A. A. A. A., made the suggestion that the joint committee study standardization of page sizes and column widths. Pressroom topics came up for discussion. Color in advertising printing and the faults which develop in printing at the rate of 50,000 per hour, and other subjects, including an illustrated

lecture on the grinding of rollers by E. Cecil of the Washington *Star,* occupied the attention of the delegates for the balance of the session.

Wednesday afternoon's program was of unusual interest to the delegates. W. W. Spalding (Albany *Knickerbocker-Press)* had prepared a paper on "Newspaper Illustration and Its Problems," which was read by W. W. Warfel, foreman of the Washington *Star* photoengraving department.

Despite widely varying results shown by the advertising tear sheet exhibit and the differences of opinion as to the underlying causes for the results, many of the executives feel that the mechanical side of the newspaper industry is "going some place," and that much progress has been made through disseminating information to those seeking it. Whether faults in some of the specimens in the exhibit were caused by newsprint, ink, strike-through, show-through, offset, stereotypes or dry mats, poor plates, faulty presspacking or rollers, lack of humidity in the pressroom, or what not, the exhibit (as Mr. Martin has it) "got under the skins" of the delegates and that alone is a sign of the value of the exhibit and the research work which has already been done by the department through Mr. Wines' leadership.

Composing Room Executives Meet



Leon A. Link, Superintendent of the Composing Room, Des Moines Register-Tribune, and Founder of Movement to Organize Iowa Composing Room Executives.

Right: Bert Manning, Superintendent Composing Room, Peoria Star, Who Was Elected President of the Illinois Association.

THE daily newspapers of Illinois, Iowa and Wisconsin sent their composing room executives to the various conferences during June to discuss technical problems affecting that department of the newspaper plant.

ILLINOIS MEETING

H. M. Scott, able chief of the composing room of the *Decatur Review,* presided over the meeting of executives from the state of Illinois at Decatur on June 14.

Production Manager Edward Lindsay of the *Decatur Herald* delivered an address, covering many of the mechanical problems of production.

Bert Manning of the *Peoria Star,* was elected president to succeed Mr. Scott. Peoria was selected for the fall meeting.

IOWA MEETING

President Leon A. Link, founder of the movement to bring newspaper composing room executives together within his own state of Iowa, met with them at Dubuque, June 8 and 9.

The program was unusually constructive. The first was a talk on "Plant Efficiency," by Ed. G. Fairfield, editor of The *Telegraph-Herald* and *Times-Journal.* Ray Leach, assistant business manager of the *Milwaukee Leader,* and formerly superintendent of the composing room of that newspaper, discussed "Keeping Costs in the Composing Room." E. H. Brown, superintendent of the composing room of the *Council Bluffs Nonpareil,* discussed "The New Elrod," and A. N. Pruess, machinist of the *Waterloo Courier,* talked on "The Giant Caster."

H. M. ("Scotty") Scott, Superintendent Composing Room, Decatur, (Ill.) Review, Who Presided Over Illinois Meeting of June 14th.

WISCONSIN MEETING

On June 15 and 16, President O. A. Winrich of the Wisconsin association and head of the *Madison State Journal* composing room, presided at the meeting of his colleagues from that state.

Publisher Partly to Blame for High Costs

By T. F. McPherson*

T. F. McPherson, Newspaper Analyst, thinks improper copy flow from news and advertising departments are often cause for excessive composing room costs.

PROBABLY in no field of endeavor today is there greater need of a reliable comparative cost system than in newspaper composing rooms. Relative efficiency can not be determined through the process of comparing composing room page costs. The matter of invisible production both of news type and invisible display advertising construction to say nothing of display advertising reconstruction, constitutes too vital an element of the total cost.

PRODUCTION DECLINE AND RESPONSIBILITY

Before launching upon the analysis of production volume it would be fitting to attempt to place the responsibility for rising page and column costs. The conclusion of this writer after 20 years of observation of, and experience in newspaper operations, is that the publishers themselves are in a measure responsible.

Perhaps this conclusion will be received with greater sympathy by business executives if attention is directed to the lack of production standards to guide those charged with the responsibility of composing room supervision. It will be recalled that at such times as new contracts are being negotiated between newspapers and local unions, discussion of production is limited to the number of thousands of ems that will constitute a minimum day's work for an operator under the terms of the proposed agreement. This writer has never heard of any publisher discussion with the local scale committee the matter of ad alley production. Yet in a great many newspapers there are as many journeymen printers engaged in ad alley production as there are linotype† operators employed.

And perhaps it will seem rather far fetched when it is pointed out that many business managers, general managers and other business executives have not familiarized themselves with production routine. Since the business administrators of newspapers have not been at the pains to acquire reliable information as to what constitutes a fair day's work at typesetting machines and in ad alley assembling, it is surprising that the craftsmen themselves have been satisfied to drift with the stream?

The method under which the following figures were developed furnishes a perfect comparative basis as the labor hours devoted to production in all the plants surveyed, were distributed in accordance with the same time-keeping system. Every survey covered a period of one month and production was measured daily. Production was distributed and paralleled with the labor hours required to produce. The problem under the system employed is reduced to labor hours expended according to classification of production and how much was produced per labor hour. By this method the matter of varying wage scales is eliminated from consideration.

Since facts alone suffice in such cases as standards of production are held up for the purpose of calculating deficiencies in production, an exhibit is set forth herein, taken from the analysis of operations of two combination daily, morning, evening and Sunday newspapers. One combination is published in a city of 150,000 and the other in a city of 185,000.

It happened that the wage scales in effect in both composing rooms were the same. One combination published 1,474 pages, the other, 1,178. The newspapers publishing 1,474 pages, 296 more than the other combination in the exhibit, had a payroll of $20,883.65 for the month surveyed while the one publishing 1,178 pages paid to composing room employes $9,932.79 for the month, a difference of $10,950.86. The wage column cost, composing room, of newspaper B, the 1,474 page publication, was $1.686 per column.

This column cost was not based upon columns published, but upon actual columns published plus news overflow and news killed and ads killed. A column cost was $1.458. B excess cost 15.9%. No better illustration than the comparison of the operations of these two composing rooms could be desired to convince publishers that it is vitally necessary to delve deeper into the problem than the mere surface fact provided by relative column or page costs. The 296 excess pages published by newspaper B at the column cost of $1.686 would amount to approximately $3,990. Yet publisher B's composing room payroll was $10,950.86 in excess of that of publisher A. Publisher A maintained 52 six-day situation and B supported 96, 44 more situations than A, who published only 296 pages less than B.

The comparative payrolls and production resultant are shown in tables I and II.

Notice first on the production side of Table I that newspapers B published 753 more columns of non-set news than

TABLE I—SITUATION RECORD OF TWO COMBINATION COMPARABLE NEWSPAPERS

(Morning, Evening and Sunday)
Time Card Distribution Converted into Six-Day Situations

	NEWSPAPER A	B	B Excess Situations
News Head Operators	2	2½	½
News Body Operators	15	22	7
Total News Operators	17	24½	7½
Classified Operators	1	1¼	¼
Display Operators	4	6	2
Total Lino Operators	22	32	10
Ludlow News Heads		2¾	2¾
Display Foremen	2	2	
Display Journeymen	10	20	10
Total Ad Alley	12	22	10
Make-Up Journeymen	4	11	7
Make-Up Apprentices	2	1	—1†
Total Make-Up	6	12	6
Apprentices			
General	3	2½	—½†
News Galleys	2	2½	½
Monotype Operators	1	1	
Machinists	2	4	2
Total Mechanical	48	78¼	30¼
Proof Readers	2	9¼	7¼
Copy Holders		7	7
Total Proof Room	2	16¼	14¼
Total Exclusive of Foremen	50	94½	44½
Foremen	2	2	
TOTAL 6-Day Situations	52	96½	44½

†Decrease

*Newspaper Analyst. Abstract of paper delivered before the A. N. P. A. convention mechanical department in Washington, D. C., June 1-2-3.

†The term "linotype" is used to indicate either Linotype or Intertype.

A. Included in this figure are comic strips, Sunday comics, news illustrations and mat heads. B published complete market reports and these were picked up by the morning paper from the evening. Hence the morning markets were non-produced insofar as the night shift was concerned. Newspaper A carried market reports but paid little attention to financial news during the period of the survey.

B set complete markets for a mid-day edition killing all tabulations later in the day to make room for the closing markets which were set complete for the financial edition.

Publisher B set 385 columns of news heads on the Ludlow for the purpose of beautifying the woman's section. Two and one-half situations were carried in the composing room budget for this purpose. As a result the society pages and woman's section of newspaper B were perfect exhibitions of the typographer's art whereas the appearance of newspaper A from the standpoint of typographical quality was certainly not above the average. All news heads in A were set by two linotype operators as compared with two linotype operators and two and one-half Ludlow operators for B.

TABLE II—PRODUCTION RECORD OF TWO COMBINATION COMPARABLE NEWSPAPERS

(Morning, Evening and Sunday)

	NEWSPAPER A	NEWSPAPER B	B Excess Situations
Pages Published			
Total	1,178	1,474	296
Morning Daily	470	530	60
Sunday Comic	64*	40	—24†
Sunday Black and White	176	238	62
Total Sunday	240	278	38
Evening	468	666	198
Non-Set News Content (Columns)	1,140	1,893	753
Ludlow Heads (Content)	.....	314	314
Ludlow Heads Killed (Invisible Production)	.....	71	71
Linotype News Heads (Content)	515	642	127
Linotype News Heads Killed (Invisible Production)	..	171	171
Linotype News Body (Content	2,571	3,125	554
Killed and Overset News Body	235	570	335
Agate (Content)	174	379	205
Agate Tabulated (Content)	209	194	—15†
Total Lino Set News Body	3,189	4,268	1,079
Total Lino Set News	3,704	5,081	1,206
Total News Published Plus Invisible News	4,844	7,359	2,515
Guts Set for Machines and Display Assembled in Ad Alleys	1,983	2,330	347
Display Advertising Load in Inches	39,661	46,596	6,935
Ad Alley Labor Hours Required to Set and Assemble	1,628	2,272	644
Column-inches Assembled per 8-hour Situation	200	164	.....
Wage Cost per Column-inch (Day Scale)	4.0¢	4.9¢	.....
Display Published	86,032	73,016	—13,016†
Forms Made	1,609	3,260	1,651
Average Forms Made Per Day	52	102	50
Invisible Make-up Load	431	1,786	1,355
Average	14	57	43
Total News Published Plus Overset and Killed (Columns)	4,844	7,359	2,515
Display Published Plus Killed	4,096	3,744	—352†
Classified Published	721	1,284	563
Total Gross Print Plus Killed (Columns)	9,661	12,387	2,726
Page Equivalent	1,207⅜	1,548⅛	341
Total Labor Hours, Exclusive of 2 Foremen	11,353	20,398	9,045
Columns Per Labor Hour	.85	.60	—.25
Composing Room Pay Roll (Month)	$9,932.79	$20,883.65	$10,950.86
Average Hourly Wage Rate	87½¢	98¾¢	11¼¢

Overset Heads Not Included in Above.
*Includes Roto. †Decrease.

From the foregoing it is obvious that the relative quality of these newspaper is not such as to make cost comparison practical insofar as the new make-up demand is concerned. A published four editions for the morning and four for the evening and B seven editions for morning and seven for evening. It is evident also as evidenced by the large number of news heads killed by B that heads were changed freely in all editions, contributing to typesetting costs and increasing the make-up labor load.

Another very important element that affected linotype news production in composing room A was the fact that plenty of live local copy was on the hooks at all times. The managing editor of A was a man who had the happy faculty of inspiring the reportorial staff to constant alertness. He took such a genuine pleasure in the creative accomplishments of his staff that the will to work was exceptionally favorable. There was virtually no time copy of the quality that slows down linotype production. There was no standing time in composing room A.

On the other hand A maintained machines with only two machinists, half the number of B. There were 25% less operators on payroll A, but with only one machinist per shift, it was necessary for operators to leave the keybord more frequently than in the case of B where machinists relieved the operators of what time loss. If A operators had had the machinist service enjoyed by B operators, undoubtedly linotype production of operators on A payroll would have reached or exceeded the standard of 6000 13-em measure nonpareil per hour.

So many elements or conditions governing the conduct of the composing room enter into the matter of attaining satisfactory linotype composition the subject must of necessity be approached with an unprejudiced spirit and an unquestioned sense of fairness. The writer has made surveys of the operations of 14 different composing rooms during the past four years. These plants were located in cities ranging in population from 40,000 to in excess of 3,000,000.

CONDITIONS IN THE AD ALLEY

Proceeding to the ad alleys one finds the key to greatest composing room waste. Surveys have revealed that virtually all publishers pay the scale for assembling from four to eight columns of display advertising daily.

The publisher of a newspaper in a city of 200,000 population surveyed by this writer was paying a day's wage for the assembling of 45 inches of display per 7-hour situation, during the shifts beginning Friday morning and ending Sunday at 1:00 a. m. The vast volume of automobile advertising composed of electros and mats with the exception of dealers' names picked up and a liberal national advertising linage, created the impression that there was a big ad alley load, which of course was not the case. In this particular composing room one very expert journeyman actually prepared the great bulk of national ads for dressing the forms.

The foregoing may sound questionable to many auditors. However, if publishers were to withdraw from circulators and advertising creators, the assistance rendered by statistics, scientifically compiled, how long would it be until chaos reigned in these departments?

The ad alley production comparison is shown in table III.

That would make an average of 85 inches of assembling daily for the three constructive excess situation on B payroll

TABLE III—AD ALLEY PRODUCTION

	NEWSPAPER A	NEWSPAPER B
Display published (lines)	1,204,448	1,022,224
Display Published (inches)	86,032	73,016
Total Ad Alley Labor, productive and non-productive (hours)	2,518	4,259
Column inches per hour, pick-up, mats, electros and plates, all included	34¼	17¼
Per 8-hour Situation (inches)	274	138
Non-Produced		
Local combination or pick-up, National complete mats, plates, electros	46,37	26,420
Display Load	39,661	46,596
Ad Alley Labor devoted exclusively to setting and assembling hours	1,628	2,272
Per 8-hour Situation (inches)	200	164
Newspaper B Excess Load (inches)	6,935	.....
Newspaper B Excess Load (inches) Average Daily	257	.....
Newspaper B Excess Situations (6-day)	7	.....
Excess Situations devoted exclusively to setting and assembling	3	.....

Newspaper A enforced a rule that required all display to be published in morning and evening dailies in combination rate. Newspaper B's policy made it optional with the advertiser.

providing the character of display construction were similar.

However, newspaper A was situated in a field where intricate display construction was the rule among local advertisers. B on the other hand published very little intricate display with the exception of grocery ads.

B newspaper enforced an ideal display dead line, affording the composing room the opportunity to work at a minimum of expense. Newspaper A virtually enforced no deadline, dis-

Continued on page 26

Second Progress Report

By B. L. WEHMHOFF, *Technical Director**
D. P. CLARK, *Associate Chemist* D. H. BOYCE, *Research Associate*

D. P. Clark, Associate Chemist, and Assistant to Mr. Wehmhoff at Government Printing Office.

B. L. Wehmhoff, Technical Director, Government Printing Office, Under Whose Direction Research Work Affecting News Ink and Newsprint Has Been Carried On.

D. H. Boyce, Research Associate, in Mr. Wehmhoff's Department at the Government Printing Office.

AN outline of the cooperative research program of the mechanical department of the American Newspaper Publishers' Association and the Government Printing Office was given in the first progress report at the Fourth Mechanical Conference. This report covers the work done on both newsprint paper and news ink during the past year. It is believed that a practical application of the results so far obtained will aid in the production of better newspaper printing.

"STRIKE THROUGH"

Progress has been made in the study of some of the factors causing "strike through." It developed that no exact diving line could be drawn between "strike through" and "show through," since in many cases the causes and even the final effect was the same.

(1) Considerable research was done on the effect of the color of the oil in causing "strike through." It was found that the staining of the paper is not necessarily caused by the dark color of the oils, but that it is due to a resinous pitchy material commonly found in dark asphaltic base oils.

Several dark-colored news-ink oils were treated by the sulfuric-acid procedure to remove the pitchy asphaltic material, which did not decolorize the oils to the desired extent. A portion of each oil was further treated by filtering it through fuller's earth. The commercial oil as received was also filtered in the same manner. This treatment successfully removed the staining constituent and the color in all cases.

Tests on news inks made from the three sets of treated oils showed that the oil treated with the sulfuric acid alone, though still dark colored, had the staining constituent removed to such an extent that it caused very little "strike through." Inks made from the oils treated with fullers' earth likewise showed practically no "strike through," but it was found that this procedure had also removed those constituents of the oil that gave it the length and flow necessary for satisfactory working properties on the presses.

It was therefore decided to confine the work to oils which had been given the sulfuric-acid treatment alone. As a result of experimentation with various methods and percentages of acid it was found that a mild acid treatment gave the best results without undue increase in the cost of the oil.

In an effort to determine whether laboratory methods could be duplicated in a commercial plant, gallon samples of thin oils treated according to the above method were made by one of the oil-refining companies. These samples proved to be fully equal to the oils treated in the laboratory and gave satisfactory results in news inks.

The following tables give the results of tests made on untreated and treated oils. It will be noted that the

*Government Printing Office. Abstract of paper presented at the Fifth Mechanical Conference of American Newspaper Publishers' Association, Washington, D. C., June 1, 1931. Based on cooperative research conducted by the mechanical department of the American Newspaper Publishers' Association and the Division of Tests and Technical Control of the Government Printing Office. Technical Bulletin No. 13.

treatment did not greatly affect the physical characteristics of the oils.

TABLE I.—*Untreated Oils*

Test	Oil No. 16	Oil No. 20	Oil No. 15
Flash point (° F.)	290	315	280
Fire point (° F.)	340	365	320
Viscosity at 100° F. (seconds Saybolt)	450	350	270
Specific gravity	.9182	.9162	.9141
Refractive index	1.4915	1.4995	1.5000

TABLE II.—*Treated Oils*

Test	Oil No. 16	Oil No. 20	Oil No. 15
Flash point (° F.)	380	355	340
Fire point (° F.)	400	380	360
Viscosity at 100° F. (seconds)	500	245	260
Viscosity at 130° F. (seconds)	235	120	130
Viscosity at 210° F. (seconds)	50	45	48
Specific gravity	.9116	.9092	.9060
Refractive index	1.5072	1.5063	1.5044

Several drums of oil No. 16 both treated and untreated have been ordered by the American Newspaper Publishers' Association together with a suitable grade of carbon black. These will be made into news ink which will be given practical tests in one of the local newspaper plants. Our laboratory tests indicate that use of similarly treated oil in the manufacture of news inks will eliminate the bugaboo of "strike through" to a considerable extent without excessive increase in the cost of the ink.

CONSISTENCY OF THE INK

Definite conclusions can not be drawn as to the effect of consistency of the ink on penetration, since there are many factors governing consistency. As stated in our previous report, the amount of grinding affects both consistency and penetration. An ink made with carbon black is of heavier consistency and usually strikes through more than an ink containing the same percentage of lampblack. There is little difference in "strike through" when inks containing the same percentages of different carbon blacks are compared even though their viscosity may vary considerably. With any given pigment and oil the penetration varies inversely with the percentage of pigment (and thus consistency) within the pigment percentage range found in commercial news ink.

SIZE OF PIGMENT PARTICLES

Relatively little work has been done on the effect of size of the pigment particles in influencing "strike through." By means of X-ray diffraction photographs it was found that the average particle size of lampblack is greater than that of carbon black. Since the inks made from carbon blacks show more "strike through" than those containing equal percentages of lamp-black, these results indicate that finely ground particles permit more oil to penetrate the sheet than do coarser particles.

CHARACTER OF THE PAPER

The character of the paper necessarily influences the penetration of the ink. The more porous the sheet, the more oil from the printing will penetrate through it. The more highly it is calendered, the more the paper will resist penetration. Drawout tests on special samples of newsprint indicate that the higher the percentage of ground wood, the less will be the penetration. Under normal conditions both jordaning the stock and adding clay or other filler apparently increase the paper's resistance of ink penetration.

AMOUNT OF INK, TEMPERATURE OF INK, AND LENGTH OF TIME OF IMPRESSION

Penetration of ink into paper will undoubtedly be increased by using too much ink, by printing at high temperatures, and by increasing the length of time of impression. No definite data has been obtained on the influence of these factors on "strike through."

PRESENCE OF ROSIN OR ROSIN OILS

The use of the cheaper grades of rosin and rosin oil in inks increases the "strike through" of inks. It has been suggested that this staining may be due to impurities in the rosins themselves rather than to any effect of the resinous material in hastening the passage of the vehicle (oil) in ink through the paper. It is planned to do further work along these lines to determine whether higher grade rosins and rosin oils have the same effect on news inks.

USE OF TONERS IN NEWS INK

Oil soluble dyestuffs, when used as toners, dissolved in either oleic or linoleic acid on ground into the ink as pigments increase the penetration of inks into the paper. However, it was found that equally satisfactory toning results could be obtained with smaller percentages of the solid dyestuffs than if the dyes were first dissolved. The resultant "strike through" would therefore be much less. Water soluble dyes, when added as pigments to the ink, do not increase the penetration noticeably, neither do they have much toning value.

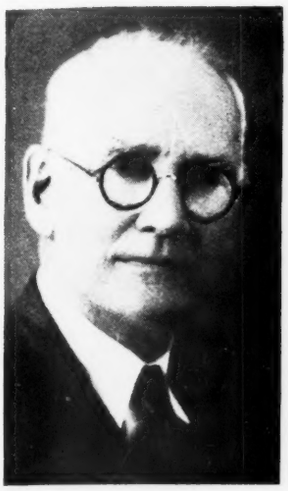
Aside from using an ink which contains a "non-staining" oil, the individual publisher can control "strike through" to some extent by deciding whether he prefers toned or untoned inks, whether he can get more satisfactory results with or without rosin in his ink, and what the most desirable consistency for his particular presses should be. Whatever the decision, the inks should be tested frequently to ascertain if they are of the quality specified. In addition more satisfactory results will be obtained by the use of a closed, soft, flexible sheet of paper of uniform thickness rather than a porous, brittle, or crackly sheet of varying thickness.

"SHOW THROUGH"

"Show through," which is the term used when printed matter on one side of the sheet is visible on the

Continued on page 24

"Beard-Shot" Metal-Melting and Feeding Method



E. E. Beard, Editor and Publisher of the Olympia (Wash.) "News," and Developer of "Beard-Shot" System of Metal Melting and Feeding for Type and Line-Casting Machines.

A NEW type of metal remelting and feeding mechanism for use on line and typecasting machines has been developed by E. E. Beard, editor and publisher of the Olympia (Wash.) *News*. The device consists of two separate units, one for melting used type or slugs into "shot," and the other a feeding unit which is mounted upon the type or linecasting machine. The feeding unit automatically feeds the "shot" directly into the metal pot as required.

THE MELTING MACHINE

The Beard-Shot Metalmelt and Metalfeed System of handling metal for line and typecasting machines is entirely automatic in operation, both in the melting machine and the feeding apparatus. Instead of molding metal into the usual type of pig or bar, this machine melts it in such a way that shot are formed which are used in place of the pigs.

The melting machine is a cast iron pot with an electric heating element on the bottom. Underneath this heating element is a series of plates with small holes in them. Leading from these plates up to the inside of the pot is a tube with a curved upper end. This curve turns down to within one-half inch of the bottom of the pot. When the molten metal in the pot rises to a height of 1¼ inches, it flows up through this curved tube and down through the perforated plates, falling in drops into the water. The pot with its extension is 20 inches deep and will hold about 500 pounds of slugs.

When the heat is turned on, the metal in the bottom of the pot is melted first. As this metal melts and rises to the top of the U-shaped tube, the slugs by their own weight settle down.

Dirt and loose papers, strings, etc., float on top of the molten metal. Thus the clean metal runs up through the U-shaped tube and falls down through the plates into the water. The moment metal becomes molten, it runs out. Dirt and slugs on top of the metal prevent oxidation. Only clean metal flows from the pot, because of the U-shaped tube.

When the drops of metal fall into the water they become "shot" and are then elevated out of the water by chain and perforated cups into the dryer, from which they are taken to the feeders.

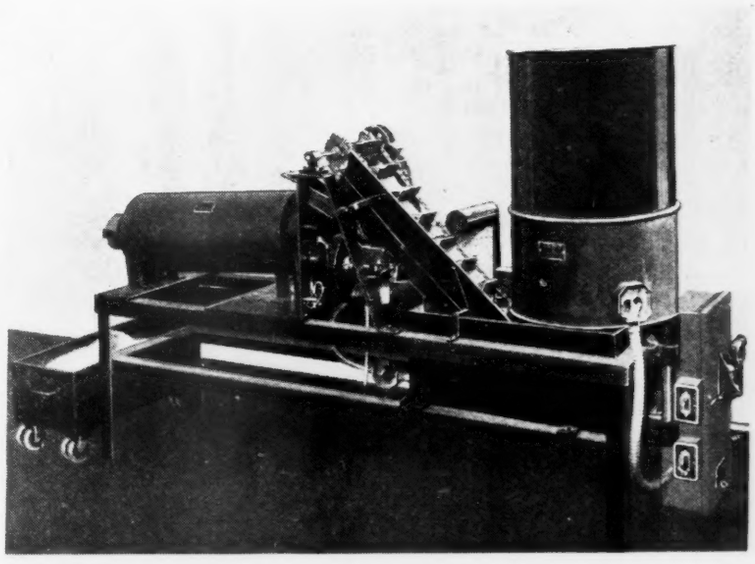
In melting the used slugs at a low temperature and allowing it to run out of the pot as fast as melted, it is claimed that three distinct advantages are obtained: The metal is not over-heated and the life burned out; the metal has no chance to oxidize, because it is melted away from contact with the air, and the component parts have no opportunity to separate because of their difference in specific gravity, due to the fact that the metal runs from the pot as fast as it is melted.

THE FEEDING UNIT

The container mounted on the type or linecasting machine is filled with 150 pounds of shot. At the bottom of the container is a valve which, in the case of a linotype or intertype, opens with each forward movement of the metal pot. The size of this opening is controlled by a float in the molten metal of the pot. As this valve opens, the "shot" runs out through a flexible tube into the metal pot.

In the operation of the Metalfeed as it pours the "shot" into the linotype pot a peculiar action takes place. The "shot" spreads out largely over the molten metal, and melts from underneath.

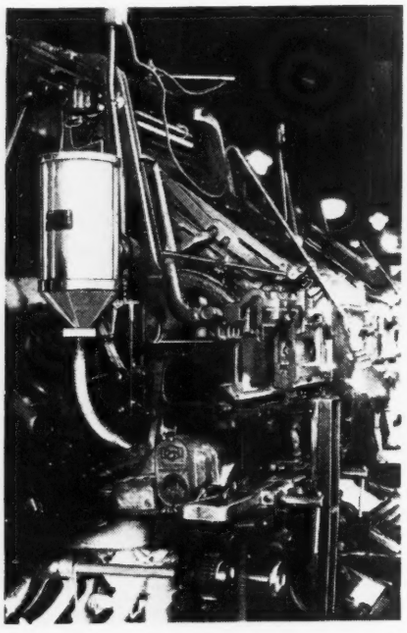
In the making of the shot, it takes on a microscopic coating of whatever impurities the water contains as it drops into the water. This microscopic coating, together with the shot itself, spreads out over the top of the molten metal in the line or typecasing machine



One of two Metalmelt machines now in active duty on the Seattle (Wash.) "Times." Each of these machines turns out "shot" at the rate of 420 pounds per hour. It is claimed that loss by dross is less than one-half of one per cent.

metal pot. This prevents oxidation and very little of the so-called "mush" ever collects on top of the metal in the metal pot. Tests for this are very difficult to obtain but it is estimated at about one per cent of total.

In developing this system, many tests, relative to the saving of dross, time, electricity, etc., were carrieed out in the Seattle *Times* plant.



One of the forty Metal Feeders used in the plant of the Seattle (Wash.) "Times." Linotype metal in the form of shot sufficient for the average shift, is put in the hopper, from which it flows automatically as needed into the metal pot. A small float in the pot regulates the amount of shot delivered from the hopper.

RESULTS OF TESTS

In August, 1930, 5195¼ pounds of used linotype slugs, together with the floor sweepings, formed the basis of several tests made during 3 days' work with the Metalmelt. From these linotype slugs there was recovered 5167 pounds of "shot," 23.75 pounds of dross, leaving a volatilization of 4.5 pounds. In the 23.75 pounds of dross were the cigarette and cigar butts, unburned matches, paper, etc. A loss by dross, dirt, etc., of .0045 per cent.

According to Mr. Beard, analyses were made of metal taken during different tests and it was found that there had been no change in the percentages of the mixture.

It is claimed by the developer that in the matter of saving electricity through keeping the top of the linotype metal pot closed, some fairly accurate figures were obtained. Meters were placed on No. 19 and No. 2 machines. No 2 had no feeder and the pot lid was left open. No. 19 was equipped with a Beard-Shot Feeder with the pot closed.

These linotype machine electric pots had outside rheostat mouthpiece control. A record was taken for 300 clock hours. No. 2 machine used 228 k. w. and No. 19 used 212½ k. w. As between the pot without a feeder and the Beard-Shot Feeder there was a saving of 15½ k. w. In a separate test over the same length of time on the same machine (No. 19 with a Beard-Shot Feeder) the cover of the pot left open, burned 221½ k. w. as against 212 k. w. with the pot closed, plainly showing that it pays to keep covers closed on metal pots. In these tests it was noted that the melting pot used practically the same amount of electricity each day, regardless of the amount of metal put through the machine.

Third Printing Industries Conference

The third conference of Technical Experts in the Printing Industry will be held under the auspices of the Printing Industries' Division of The American Society of Mechanical Engineers in New York City, on March 14 and 15, 1932. The various organizations associated with the printing industry have approved these dates and have assured the Division of their cooperation. The conference will be open to all interested in the technical progress of the industry.

The local host will be the McGraw-Hill Publishing Co. and the sessions of the conference will be held in the auditorium of its new building, Ninth Avenue and 42nd Street, in accordance with the invitation extended by E. D. Conklin, Vice President in Charge of Production.

Floyd E. Wilder of the Hearst Publications, 57th Street and Eighth Avenue, Chairman of the Pan-Graphic Committee of the Division, will develop the technical program.

Mr. Wilder announced that all organizations interested were being solicited for their comments as to how the program might be developed so as to be of the greatest value to the printing industry. One of the suggestions made for the improvement of this and future conferences was that more time be allowed for discussion of subjects and that papers be presented only in abstract, allowing ten minutes to each paper. The Committee approved this suggestion. The papers may be secured without charge, in advance of the meeting by any interested person upon application to the Printing Industries' Division, A. S. M. E., 29 West 39th Street, New York, N. Y.

Lanston Net Earnings

Net earnings of the Lanston Monotype Machine Company for the year ending February 28, 1931, are $576,226.94, according to the report made by the president, Harvey D. Best, at the annual meeting of stockholders and board of directors held May 8 at Alexandria, Va. Dividends paid for the year mounted to $480,000.

Compared with the previous year, the net profits show a reduction of $286,562.61, resulting from a smaller volume of sales of Monotype and Barrett products in the Eastern, Middle Western and Southern sections of the United States. The Monotype Company of California and Monotype Company of Canada, Ltd., show an increase of sales and earnings for 1930 against 1929. The English company reports earnings for the fiscal year ended September 30, 1930, of 17 per cent on outstanding shares. Dividends were maintained at the rate of 12 per cent.

The report indicates an increase in sales over the previous year in the Latin American market, with Companhia Lanston do Brasil, S. A., in full operation with offices in Rio de Janeiro and Sao Paulo.

Current assets of the Lanston Monotype Machine Company of Philadelphia are $5,577,216.41 as compared with $5,519,795.82 at the beginning of the year. The treasurer's report shows cash on hand of $1,733,596.22, an increase for the year of $120,611.04.

MECHANICAL THERMOSTAT

For The Electric Pot

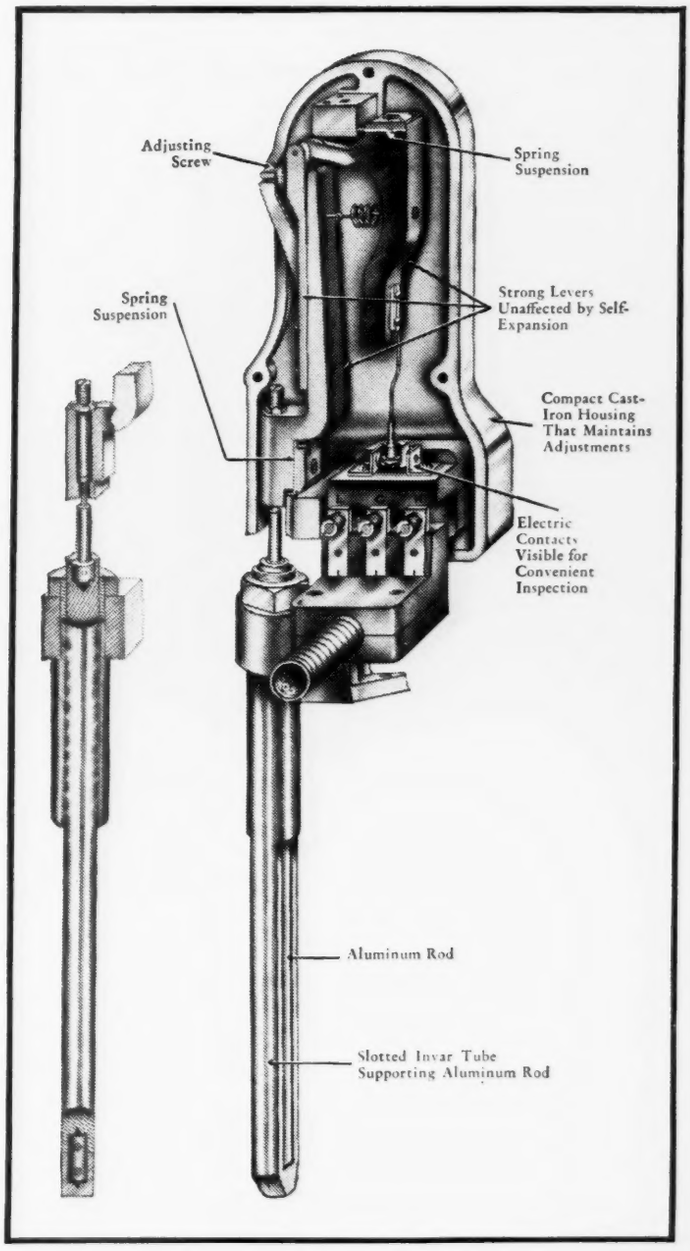
The Mechanical Thermostat for the Linotype Electric Pot functions by the expansion and contraction of two unlike metals. No mercury is used. The expansion element is a sturdy aluminum bar (supported by a slotted Invar tube), which withstands considerable overheating without deterioration. This bar may easily be adjusted or replaced by any machinist or operator.

Through the use of the best suited metals and a correctly designed leverage system, close regulation of temperature is obtained, as well as permanent setting of the Thermostat.

The two elements in the expansion system (the slotted Invar tube supporting a sturdy aluminum bar) have the greatest difference of linear coefficient of expansion of any two metals that can be used at correct operating temperature, so that maximum movement of contact for the complete range of temperature is obtained with the shortest possible leverage.

The system of leverage consists of strong, short levers which are unaffected by self-expansion. These levers operate on an improved spring suspension system, free of friction and wear. The entire mechanism is supported and enclosed in a compact cast-iron housing.

The Mechanical Thermostat is simple and trouble free in operation. It may be applied to outstanding electric pots of both the Linotype and the Cutler-Hammer type. Write the nearest Linotype Agency for detailed information.



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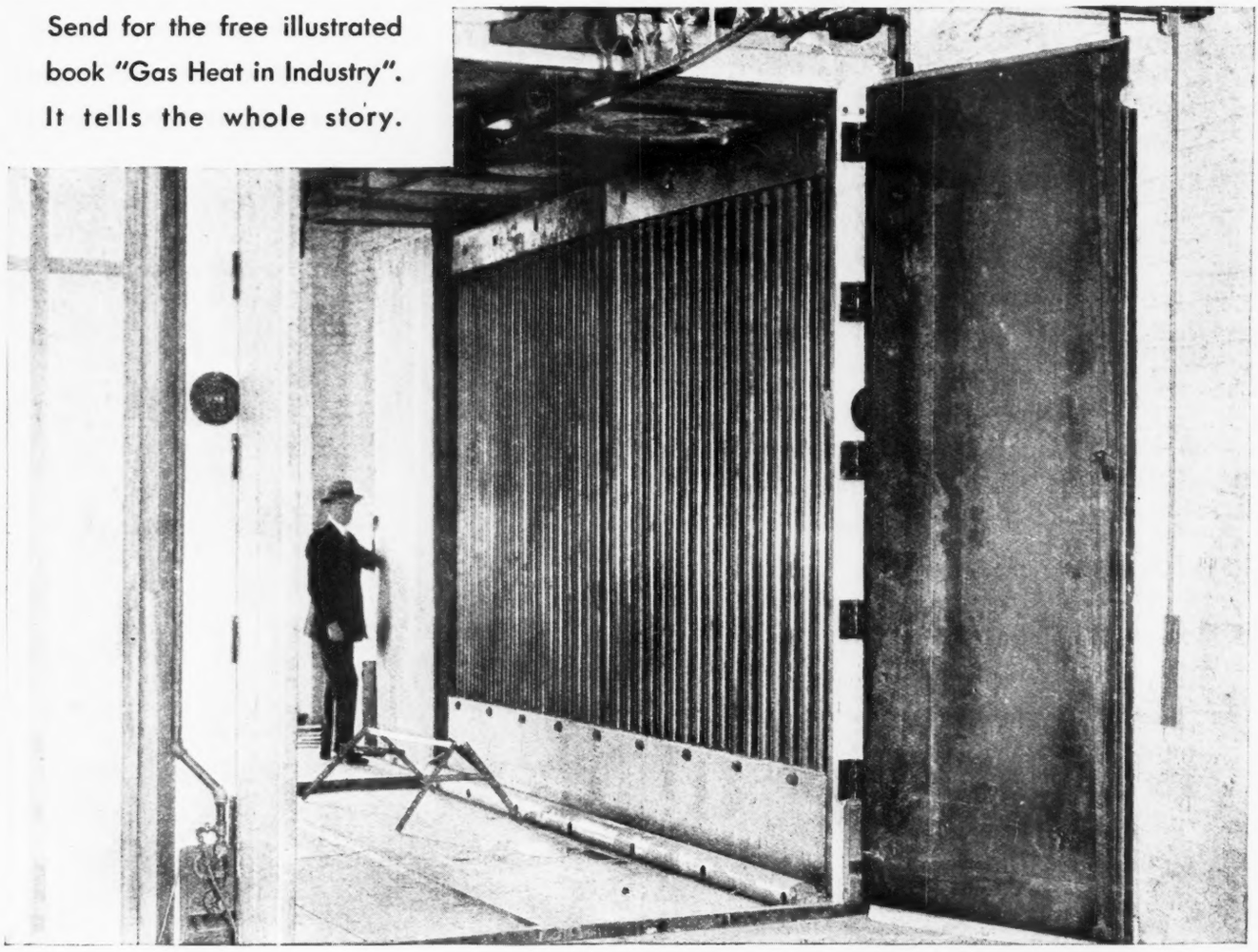
Japanning with GAS

Send for the free illustrated book "Gas Heat in Industry". It tells the whole story.



GAS heat is well-nigh universal in japanning operations. It meets every requirement — gas heat is easily controlled; uniform temperatures are maintained without effort; the fuel problem is entirely eliminated. Wherever heat is needed, gas will best supply it.

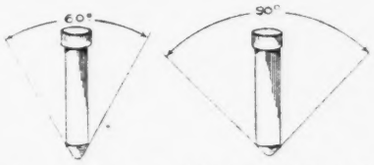
AMERICAN *Gas* ASSOCIATION

420 Lexington Avenue, New York

Latest Printing Equipment Mechanisms

Thermostat for Electric Pots

A mechanical thermostat to control the temperature of metal in the Linotype metal pot is announced by the Mergenthaler Linotype Company. "This thermostat, simply constructed and trouble free in operation," runs the announcement, "keeps the temperature at just the desired point in the metal pot. Once this device has been set as desired, it needs no further attention. Mechanically—automatically—it keeps the temperature from getting too high or too low—and thus makes for good solid slugs. No mercury is used.



Improved Vise Jaw (left-hand) Detent Pin

It can be applied to outstanding electric pots of both the Linotype and Cutler-Hammer type.

OTHER RECENT IMPROVEMENTS

The angle on the vise jaw (left hand)) detent pin has been changed to minimize wear on the detent pin plate and to facilitate the releasing of the vise jaw.

A new distributor shifter slide stop stud has been designed with an adjusting screw and lock nut to provide an adjustable stop for the distributor shifter slide.

A new spaceband specially tapered to expand from .0369 of an inch to .1219 of an inch virtually does away with any hand spacing of lines.

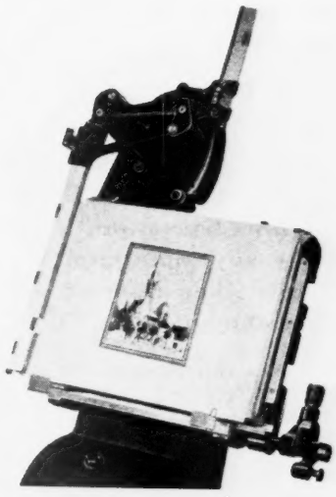
"Hold Heet" Glue Pots

The Russell Electric Mfg. Co., 340 W. Huron Street, Chicago, Ill., is sponsor for a new "Hold Heet" electric glue pot which carries thirteen important improvements.

The outer pot is made from electrically-welded heavy steel plate which is dent-proof. Both sides of the outer casing are Parkerized to make it rust-proof. The nickel-plated glue chamber is made from extra heavy gauge seamless spun copper. A wide beaded flange extends outside of and far down over the side of the pot so drippings will fall clear of the pot. No glue can lodge between chambers. A water jacket is not utilized in the construction of the pot as no water is used.

A new patented contact theromstat is fitted to each pot and the thermostat bar carries no current. It lies in solid metallic contact against the solid copper bottom of the heating chamber (not in an air pocket) and takes its accurate regulation direct from the temperature of the glue itself. Glue temperatures are held within one degree F. The patented, flattened, reflexed heating element distributes heat over a large area and thus "hot spots" are avoided. The element is easily replaceable. No special wiring is needed as 12 one-quart pots can be operated from an ordinary wall-circuit. Made in sizes from 1 to 12 quarts capacity.

New Automatic Register Guides



The new series Heidelberg Press has been improved by the addition of Automatic Register Guides, according to information released by the Heidelberg Printing Machinery Corporation, 270 Lafayette St., New York, N. Y.

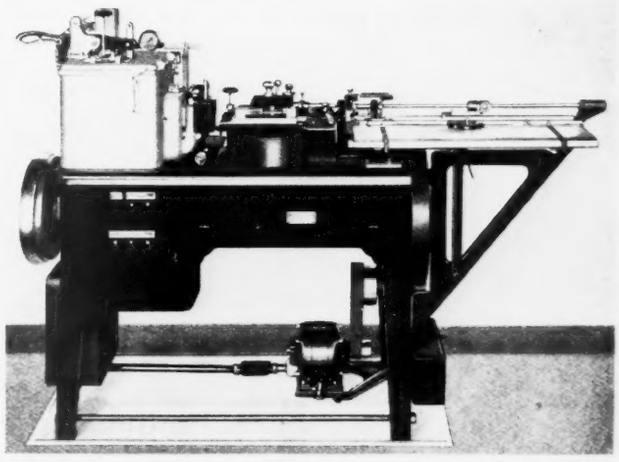
The new guides, which are an integral part of the machine, make possible hair-line register for all classes of work, including halftone process color printing.

After a sheet has been deposited on the platen by the gripper, it is released and the guides automatically move the sheet into exact position for printing. After the impression has been taken, the gripper closes and takes the sheet to the delivery table. The setting of pins, quads or gauges on the packing is eliminated with the new register control.

Solid tint, color plates, heavy halftones and "reverse" plates may be inked and printed on this press. This has been made possible by the addition of a rider which has been added to the form rollers.

New Elrod Casts Strip 1 Point to 36 Points

The new Model F Elrod lead, slug, rule and base caster now has a range in thickness of strip material from 1 to 36 points inclusive. The quality of this material has been still further improved, and the quantity of product has been stepped up. In construction and operation the Elrod is still simplicity itself—thus requiring the minimum of labor in its operation.



The new improved Model E Elrod produces strip material varying in thickness from 1 point to 18 points. This machine meets the needs of the average commercial printer who may not require strips more than 18 points in thickness.

The casting of 1-point leads which constitutes the latest

Moisture Is Money

PRINTING troubles are expensive, and indifference to press room difficulties is an economic crime. Guesswork is poor business policy at any time, and it is absolutely foolhardy when resorted to in the printing establishment.

Humidity, with its many variations, is at the root of most of the press room worries and disappointments. Properly controlled, it is no bugaboo. And control is simply a matter of understanding conditions and overcoming them.

As a large percentage of the troubles in the press room and bindery is due to deficiency in the moisture content of the paper, the principal problem confronting the publisher or printer has been how to get the proper amount of humidity (moisture) into the paper at the time of its use on the press.

Moisture, properly controlled, means money to the publisher or job printer. It saves ink. It saves paper waste. It insures high-speed production. It makes possible better printing results. It safeguards the health of the employees. It promotes cleanliness in the press room. These results are attained through the elimination of static, through the greatly reduced number of paper breaks on web presses, and through eradication of ink mist and paper dust.

Absolute control of the moisture content of paper as it is fed into the press has been accomplished by Vapo Systems, Inc., through the development of a small device which is attached to the press units in such manner that the paper is properly conditioned at the exact moment of its use.

This device, which consists of a brass cylinder from which a fine cold vapor is projected through jets, is applicable to any type of printing machinery, or may be utilized in any industry dealing with paper.

In the newspaper publishing field, Vapo Systems equipment has been found to effect important savings in time, paper and ink. Where pride in quality of printing is a consideration, it is indispensable. Where speed in production is concerned, it delivers the goods. Where economy is desired, this system will pay for itself in less than a year. It is quickly installed, it is cheap to operate, and it is absolutely dependable.

We would be pleased to explain to you how Vapo Systems equipment can be utilized to lighten your press room troubles, give you increased output, and effect savings that you have not dreamed of. Write to us today, explaining your problems. There is no obligation on your part. We shall consider it a privilege to offer suggestions that may help you.

Vapo Systems
Incorporated

211 West Wacker Drive CHICAGO, ILLINOIS

development in the program of Elrod improvement, must be seen to be appreciated, for they are cast clean and solid. The Elrod method of delivering a continuous strip is of particular advantage here, as these exceedingly thin leads are free from brittle joints or welds.

The electrically-heated crucible, now available for both model Elrods, has many advantages. Crucible temperature is automatically regulated, current being turned on and off by thermostatic control, without attention from the operator. The Electric Elrod is so equipped that any given combination of switches will give the same results, indefinitely. This tends toward a continuity of production not so readily attained with a gas-heated machine.

Both new Elrod models are equipped with a new positive oiling device which forces into the mold under pressure a uniform supply of oil. This has greately simplified operation, has increased the life of the molds, and has contributed materially to improving the quality and uniformity of the product.

Elrod molds are integral, self-contained units requiring no adjustment of any kind. There is nothing about them to get out of order. A change from one mold to another, including the operation of sealing, can be accomplished in about seven minutes. Molds for the larger point sizes deliver the strip with hollowed body, so as to minimize consumption of metal.

The Elrod uses standard linecasting machine metal, thus obviating any need for keeping two separate kinds of metals.

Challenge Ink Distributor

A new hand-inking device for use in connection with the taking of proofs in one or more colors is being manufactured by The Challenge Machinery Co., Grand Haven, Mich.

This machine is intended for use by printers, engravers and electrotypers. It is a labor-saving unit which is designed to eliminate drudgery and consequently better proofs may be obtained through its use.

The distributor consists of a compartment stand, on the top of which is mounted a bracket supporting two metal distributing cylinders which are operated by a crank. A rack is provided, upon which to hang the hand-inking rollers. To ink the hand-roller, just set it on the distributing cylinders and give the crank a few easy turns and the hand-roller is ready to ink the forms with a uniform spread of color. The roller is hung upon a rack after use, which prolongs its life and prevents flattening.

The metal ink distributing cylinders are easy to wash up after the day's work by rubbing them with a benzined wiping cloth.

Further particulars may be obtained by communicating with the manufacturer.

Back of Your Selection of

Wood Dry Mats

●

WHEN a newspaper decides to use Wood Dry Mats, it represents more than just the selection of another competitive product.

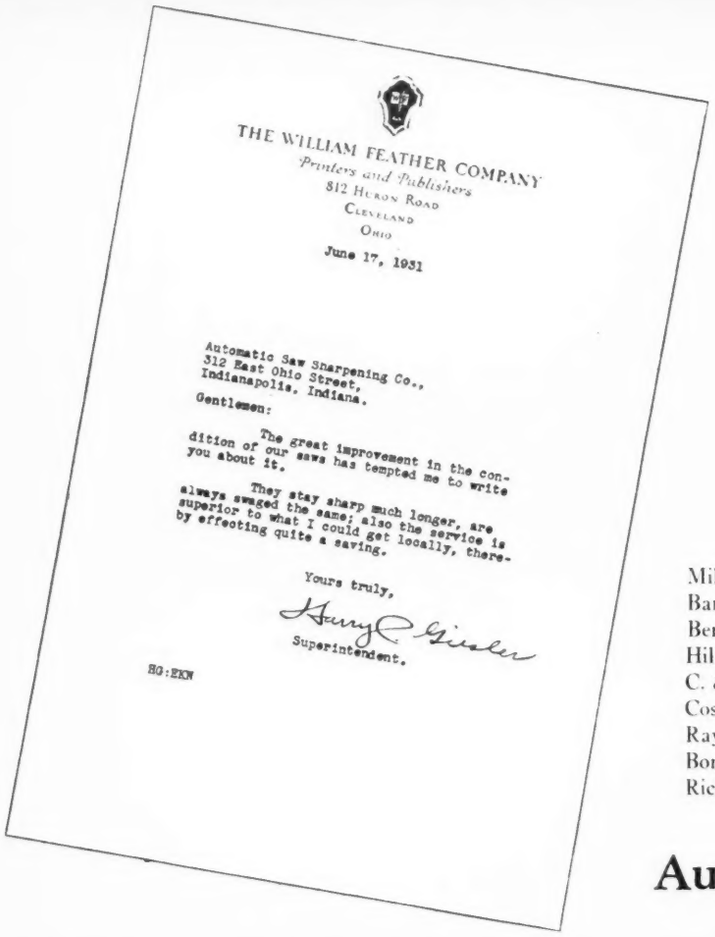
Back of the dry mats supplied for daily use in producing a better printed newspaper, stand the experiments and tests of the Wood laboratory and stereo room. And back of the Wood laboratory stands a nationally known company of chemical engineers who are in close touch with every effort to improve and perfect the Wood Dry Mat.

Your selection of Wood Dry Mats will be the recognition of the successful efforts of chemical engineering and modern production methods.

WOOD DRY MATS
ALWAYS UNIFORM

WOOD

FLONG CORPORATION
HOOSICK FALLS, N.Y.



THE WILLIAM FEATHER COMPANY
Printers and Publishers
812 Huron Road
Cleveland
Ohio

June 17, 1931

Automatic Saw Sharpening Co.,
312 East Ohio Street,
Indianapolis, Indiana.

Gentlemen:

The great improvement in the condition of our saws has tempted me to write you about it.

They stay sharp much longer, are always swaged the same; also the service is superior to what I could get locally, thereby effecting quite a saving.

Yours truly,

Harry R. Gisler
Superintendent.

HG:EKN

THE saw blade is the heart of your machine and should be given the best of attention. Printers' and Stereotypers' saws will cut smoother, freer, and stay sharp much longer if sharpened by us, as they will be swaged and ground on machines that make every tooth uniform.

Your saws will be returned to you the same day received by us in our special convenient carton, which enables you to send saws to us without addressing. Give us a trial and let us save you money by increasing production and better workmanship.

Price for swaging and sharpening, 75 cents. (We pay the return postage.)

Note our low prices and trade-in plan on new saws for any make machine.

SHARPENED BETTER

Miller Saw-Trimmer	6 in.	$4.00; with old saw traded in	$3.00
Barnhart Bros. & Spindler	5½ in.	3.00; with old saw traded in	2.25
Ben Franklin	6½ in.	4.50; with old saw traded in	3.35
Hill-Curtis, TrimOsaw	6½ in.	4.50; with old saw traded in	3.35
C. & G.	6 in.	4.00; with old saw traded in	3.00
Cost Cutter	6 in.	4.00; with old saw traded in	3.00
Ray Brown	6 in.	4.00; with old saw traded in	3.00
Bonnett Brown	5 in.	3.00; with old saw traded in	2.25
Richards Saw-Trimmer	6½ in.	4.50; with old saw traded in	3.35

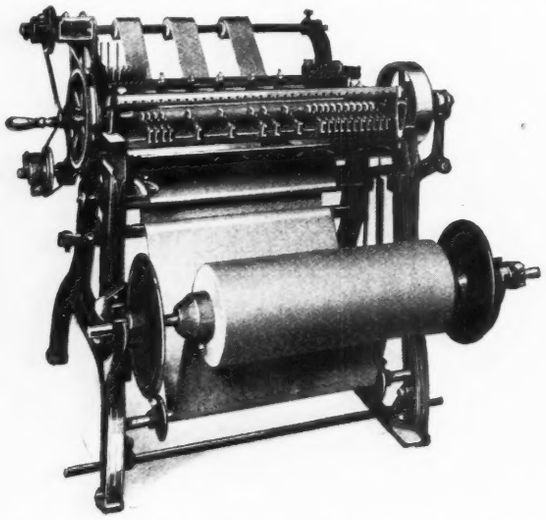
Automatic Saw Sharpening Co.

312 East Ohio Street, Indianapolis, Ind.

Jacques Special Slitter with Follower Knives

John Jacques & Son, 93 Webster Street, Worcester, Mass., are now furnishing a special slitter with follower knives which has heavy frames and rewinding arms for slitting both heavy and light papers, stay papers, imitation leather, bookbinders' cloth and other fabrics.

The follower knives are used on heavy material to complete the cut-off, and can be revolved out of position when

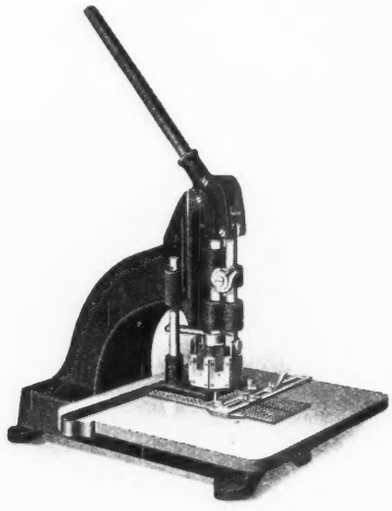


not in use, as on light papers. The rewinding shafts are driven with chain and sprockets when large rewinds are required. This machine is equipped for motor drive when wanted. Made in three sizes, 30, 40 and 42 inches. Will slit as narrow as 7/16 inch. Rewinds to about 19 inches in diameter. Three rewinding shafts furnished if wanted.

The regular equipment consists of two rewinding shafts, 20 cutters and follower knives.

Plate Mortising and Correcting Machine

The Sterling patented plate mortising and correcting machine is one of the most valuable time and labor-saving mechanisms ever introduced to electrotypers and stereotypers. It eliminates hand revising punches, calipers, gravers



and other tools used in correcting or altering plates. It mortises with exactness for the insertion of 4, 6, 7, 8, 9, 10, 11 and 12 point bodies from a single type to entire lines. It cuts equally well openings for odd sizes and the insertion of cuts,

tints, etc. All cutters are contained in the revolving head, and can be changed from one size to another in a few seconds.

The width in points of each cutter is plainly indicated on the head. Each one is made with a projecting tongue, and with each movement of the handle the machine will mortise either the square of the tool used for single type or a slot 5/8 inch in length. Means are provided so that slots less than 5/8 inch in length can be cut.

The die in the bed is adjustable to the tool used and insures a smooth cut. The sides of the cut are absolutely perpendicular and the mortises are to exact point bodies, enabling the type to be perfectly lined at the head or foot as desired. The locating gauge enables the operator to place the work in position exactly as desired.

This tool can be used to great advantage in mortising out zinc etchings for the insertion of halftone plates or vice versa. All variations of shapes can be cut out from engravers' metals up to 6 points in thickness.

The Printing Machinery Co., 424-436 Commercial Square, Cincinnati, Ohio, will furnish further particulars upon request.

Dirt a Cause of Process Difficulty

By FREDERICK F. UHL

CLEANLINESS about the plant of a photoengraving establishment is as essential to the production of good work as is the equipment. The modern shop is usually well fitted with the best of cameras, lenses, lamps, screens, machinery, etc. Chemicals, of course, are not overlooked and few workers have occasion to complain about the lack of materials to work with or the quality of the same. Yet, we frequently hear complaints that this, that or the other is not working right, or that such and such a solution has "gone on the bum."

Why? That eternal question—Why did it do that and who is to correct it, and how?

Most always the engraver will find the cause of the trouble and correct the fault. Usually, on investigation he finds something along the line that is not clean.

This may be physical or chemical, or both. When you find a floor that is filthy and shelves that are dusty you will know there is trouble in making good negatives.

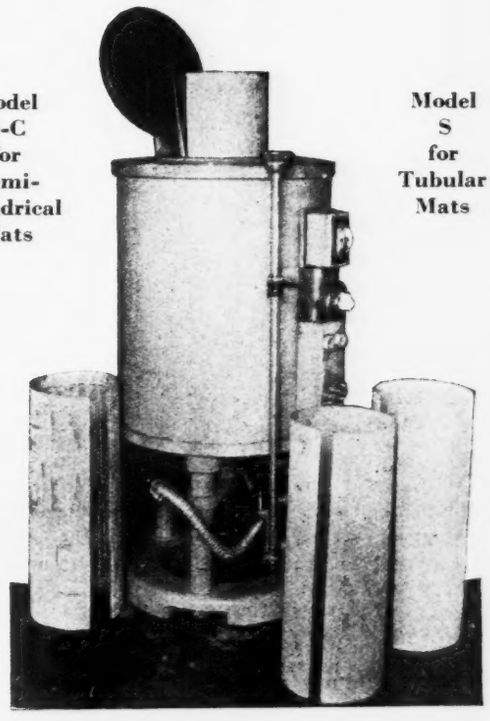
A careful operator will see that the camera is clean and free from dust; he will keep the lens carefully brushed with a light camel's hair brush, and occasionally wiped with a soft linen or muslin cloth. He will also keep the lens capped when not in use. Screens should be well polished and kept in a special cabinet when not in the camera. Also the dark rooms should be regularly cleaned and the shelving washed or at least carefully wiped, so that dust on them will be gathered up to prevent it spreading around the room (as is frequently the case).

Photoengraving shops are mostly located in the cities, where one expects to find more dust and grime. Therefore, it behooves the worker to make every effort to keep the premises clean if he cares about making work easier and more pleasant for himself.

FORM-O-SCORCH
Centrifugal Matrix Scorchers

Win and Hold the Approval of Newspapers

Model S-C for Semi-Cylindrical Mats



Model S for Tubular Mats

MODEL S MACHINE

DELIVERED AND ON ORDER

Reasons Why

Amsterdam Evening Recorder, Amsterdam, N. Y.
Removes All Buckles.

News Tribune, Waltham, Mass.
Forms Perfectly.

Progress Bulletin, Pomona, Calif.
Uniform Heat.

Record-Herald, Wausau, Wisc.
Scorches Fast.

Saratogian, Saratoga Springs, N. Y.
Low Operating Cost.

Stevens Point Daily Journal, Stevens Point, Wisc.
Will Not Burn the Mat.

Daily Republican Times, Ottawa, Ill.
Thermostat Heat Control.

Times Publishing Co., Warren, Pa.
Standard G. E. Heater Units.

Courier-Citizen, Lowell, Mass.
Holtzer-Cabot Motor.

Form-O-Scorch Centrifugal Matrix Scorchers are built on Special Order for Semi-cylindrical and Tubular Plate Casting Boxes in any size.

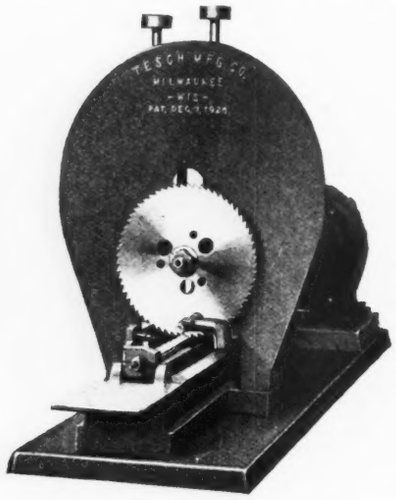
Sold by

All Dry Mat Mfgrs. Printing Press Mfgrs. General Electric Co.

American Publishers' Supply Company

P. O. Box 131, West Lynn, Mass.

Sharpen your own Saws and Save Money



Why bother sending saws out to be sharpened? Why put up with the inconvenience of dull saws, spoilage and delays waiting for saws to be sharpened and at the same time pay for the sharpening?

The TESCH *Automatic* SAW FILER

. . . is a composing room economy and convenience. This Tesch Saw Filer is priced *unusually low*. Its many economies soon save the purchase price. It can be had in hand power or motor driven types. It is fully automatic, only two simple adjustments, adjustable as to angle and pitch, and built to give a lifetime of service. It is guaranteed to be of high grade materials and workmanship; any defective part will be replaced free of charge within a period of one year.

Send the coupon below and let us give you our latest prices on the Tesch Automatic Saw Filer.

●

TESCH
Manufacturing Company
419 North 27th Street
MILWAUKEE :: WISCONSIN

TESCH MANUFACTURING COMPANY,
419 North 27th St., Milwaukee, Wisconsin.
Gentlemen:—
Without obligation please send me complete information and prices on the Tesch Automatic Saw Filer.

Firm Name _____

Attention of _____

Address _____

City _____ State _____

Second Progress Report

Continued from page 14

opposite side, may be due to either the paper or the ink, or both. The paper will allow the ink to "show through" if it is too thin, if it is unusually porous, or has numerous "pinholes" which allow the pigment to penetrate unduly into the sheet, or if the fibers themselves either naturally or through some process of manufacture are more or less transparent. The ink will "show through" at times if made with a thin oil, as such oils penetrate the sheet rapidly and have a tendency to make the paper fibers transparent. Inks with a high toner content tend to "show through" because the dye is dissolved in the oil to a certain extent and is carried into the sheet with it. This causes the blue or violet color of the toner to show up on the opposite side of the sheet. A similar effect occurs when too much ink or too heavy an impression is used. If too much ink is used the absorption of the excess oil causes transparency, and if too much impression is used the pigment itself may be forced far enough into the sheet to be partially visible from the opposite side.

"OFFSET"

No definite information has as yet been obtained as to the causes of "offset." Work done so far indicates that offsetting occurs when the ink penetrates the paper at an excessivly high rate, due to either poor paper formation or thin ink. This may possibly be due to the oil soaking into the paper too rapidly, leaving the pigment lying on the surface without sufficient oil to act as a binder.

"FLYING INK"

The following possible cause of "flying ink" have been suggested by various printers and ink experts:

1. High speed of the presses.
2. Lack of humidity in the pressroom.
3. Improper ventilation of the pressroom.
4. Incorrect pressroom temperature.
5. Incorrect ink.
   - *(a)* Too long and stringy.
   - *(b)* Too short and fluffy.
6. Old, hardened or imperfect rollers.
7. Old or uneven blankets.
8. Improper roller setting.
9. Too much ink on rollers and printing plates.

It will be seen from the above that this is a printing trouble that can not be solved easily in the laboratory, but must be investigated in the pressroom. Work on this problem is planned, but has not been started due to the work already in progress.

CARBON BLACK VERSUS LAMP BLACK

The question is occasionally raised as to the relative desirability of carbon black and lamp black as pigment for news inks. As a rule, the price is apparently the deciding factor as to which shall be used.

Disregarding consideration of price, it can not be

said definitely that either the one or the other makes the more satisfactory ink. Lamp blacks as a rule have a greater bulk than carbon blacks and for a given pigment percentage make an ink of thinner consistency. Lamp blacks yield duller and grayer inks than carbon black, while carbon-black inks have a glossy black finish. Some publishers prefer the dull finish, claiming that it is less tiring to the eye, while other prefer the glossier appearance, saying that it gives more "snap" to the ink. No simple, accurate, physical or chemical test has been found that will distinguish definitely between lamp black and carbon black in inks, and no method has been developed to determine the respective percentages of each when they are used in the same ink. The best indication of which has been used is an examination of the surface of printed sheets, and this is by no means accurate.

Through the courtesy of Dr. S. B. Hendricks of the Fixed Nitrogen Research Laboratory of the Department of Agriculture, X-ray photographs of both carbon blacks and lamp blacks were made.

These photographs yielded the following information:

1. Both lamp black and carbon black are definitely crystalline in nature.

2. The average size of the particles of lamp black is relatively much larger than that of carbon black.

3. The average particle size of the better grades of carbon black is finer than that of the cheaper grades.

4. There is very little change in the particle size of carbon blacks on grinding into inks, whereas the average particle size of lamp black is considerably reduced by grinding.

Since both blacks are crystalline, X-ray photographs will not definitely distinguish between them except as to particle sizes.

It was not possible to obtain data as to the condition of agglomeration or dispersion of these crystalline particles in the ink itself, since X-ray photographs can not be made of the pigments when dispersed in an oily medium. To our knowledge no instrument has been devised which will determine the degree of agglomeration or dispersion of pigment particles in the consistency in which they are found in ordinary news inks. However, it is believed that the microscopic method of pigment examination described under methods of analysis will show the state of division of the pigment particles under similar conditions. Future work is planned to determine whether the size of the particle can be used to differentiate between lamp black and carbon black after being ground into ink.

(Continued next month)

What Price Good Printing?

At the recent conference of mechanical men held under the auspices of the A. N. P. A., the poor printing exhibited was an eye-opener.

■

The reason for so much poor news printing now current may not be far to seek nor hard to find. In a well meant desire to economize, too many publishers are chasing after pennies and reaping a harvest of poor printing. Many publishers have already learned that there is a brand of economy that is too expensive, and many more will sooner or later learn it, too.

■

By going back to better ink, better newsprint, better metal and better mats, publishers are able to produce better papers—clearly and cleanly printed papers—which are easily read and make for happy and contented readers and advertisers.

■

If you are not satisfied with the appearance of your paper and your readers and advertisers are complaining, we respectfully suggest that you try a case of Certified mats in your stereotype foundry.

■

And back to better ink, better newsprint and better metal, too. That's true economy.

■

Forget price! Use quality at the right price! It pays!

CERTIFIED DRY MAT CORPORATION

338 Madison Avenue New York

For dependable stereotyping—use Certified Dry Mats

Made in U. S. A.

BURGESS
"CHROME" MATS
A LABORATORY PRODUCT

Will You Accept This Challenge?

Burgess "Chrome" Mats are of very fine-grained construction with a practically nonporous face, making them so sensitive that they will take an impression of the finest screen—hold it—and reproduce it perfectly.

This outstanding advantage insures faithful and exact reproduction in your columns of news matter and advertisements.

The use of these mats eliminates "make goods" on advertisements printed poorly—also arguments over payment of bills presented for such advertisements.

Burgess "Chrome" Mats will give you —without mental reservations or qualifications—a better printed newspaper in every respect.

We challenge you to try them—back to back with the mats that you are now using. We will gladly send you samples free of charge for the test. Please mention the type of casting box that you use; also the shrinkage desired so that we can forward you the correct mat, properly conditioned, ready to use.

As a further convenience and service to our customers, we are in a position to take care of your requirements for Stereotype Department Accessories of all kinds.

STEREOTYPE MAT DIVISION

C. F. BURGESS LABORATORIES, Inc.

Manufacturers of cellulose, acoustic and electric products

111 W. Monroe St. Chicago, Ill.

Publisher Partly to Blame

Continued from page 12

play copy being accepted for the evening newspaper as late as 10:30 a. m. for a 1 p. m. edition and as late as 7:30 for an 11:00 edition. Publisher A demands service of his superintendent in all respects severely rigid. On the other hand the business administrator of B enforced dead lines suggested by the superintendent.

How then can one publisher by comparison of mere page costs, based upon the newspaper content with varying news and advertising quotas without knowledge of invisible news and advertising production, unmindful of relative dead line conditions, relative equipment facilities, nature of advertising copy and style and relative sanitary conditions, judge as to the relative efficiency of his composing room operations as compared with any other?

No men could be more loyal to employers than the two superintendents and the staff of foremen in both plants. From the standpoint of ability it would have been almost impossible to find more capable men than these superintendents. Where then shall the responsibility for the difference in accomplishment be placed?

Publisher A conducted his newspaper with minimum situations throughout the plant. He insists upon the net earnings being maintained at a certain sum and ruthlessly held the payrolls in all departments under rigid control to that end. Department heads were permitted to employ only within the limits of the budget and if they did not take kindly with that policy they were privileged to resign. The result was that men worked with a will and substitutes listed on the board were few.

In the plant of publisher B the ad alley foremen were desk men exclusively. They employed extras when they thought they needed them and without guidance of any system except the total display on hand in spite of the fact that 98 per cent of the local display was assembled and ready for the forms two hours before the closing time. There were many substitutes looking for work and it was made too easy for ad alley foremen to employ. In composing room A the ad alley foremen worked and directed.

Another element that enters largely into the ad alley production is reconstruction of display. A reconstructed very little, virtually none. B required 1 2/3 ad alley situations, (6 day) to revise store proofs. It was entirely due to the refusal by publisher A to permit more than one revise, that reconstruction was eliminated. Advertisers were made to understand that the office would follow copy and if the finished ad was not satisfactory, it was up to the ad writer to improve his technique.

Publisher A was up against bitter competition that published a newspaper of superior quality. It was only by virtue of a steadfast resolution to adhere to that principle that reconstruction was eliminated. Local merchants tried to weaken that resolution by removing volume for a time evidently believing that the competition could render adequate service. After a time the volume was restored manifesting that A's circulation was essential to the local merchandising structure, sustaining the theory of newspaper owners that newspapers will deliver results to advertisers each in proportion to total circulations in the field, subject of course to the relative quality of the newspapers.

(Continued next month)

Bodoni Characteristic

Giambattista Bodoni, perhaps the most distinguished eighteenth century printer, was the first to make lavish use of white space. His generous spacing between lines and wide margins excited emulation and praise.—*The Linotype News.*

The Renck Process « » Its Possibilities

By FRIEDRICH SACHS*

THIS new printing process has been invented and developed by Heinrich Renck, of Hamburg, Germany, during the last four years. Renck is a practical photo-engraver and owns a photo-engraving plant in Hamburg. His new method of printing is adaptable for practically every kind of rotary and flat-bed printing.

Its main technical differences, as contrasted with the methods used at present, lie in the following facts:

1. Renck does away entirely with the etching. He copies the negatives photographically on thin brass sheets, and instead of etching those like copper sheets, he treats them chemically. He then uses these unetched plates either in forms on a transfer press or he prints directly from those sheets. By this method, especially in four-color printing, all the difficulties of incorrect etchings and of lack of register are avoided.

2. Renck uses plain and smooth shells, or plates, instead of relief shells or plates, like stereotype and electrotype.

For rotary printing these shells, made of brass, have the same thickness, size, and shape as the curved stereoplates now being used. These are prepared for printing in the following way:

The shells first get a nickel-plated covering, which can be given at any spare time. The nickeled brass shells are put upon a plate cylinder which is part of a transfer press. This transfer press is a device similar to a matrix rolling machine, one roller being covered with a rubber blanket and the other roller being a plate cylinder for the nickeled brass shells. The forms consisting of any kind of type, halftones, and, or, line-matter, are placed upon the bed of the transfer press and rolled up with transfer ink. The transfer is then made by moving the table of the transfer press and transferring the form onto the rubber blanket and from there to the nickeled brass shell. The printing subject is now in ink and on the Renck shell. The shell is then removed from the transfer press, dusted in with asphaltum and cleaned down with talcum. It is placed in a muffle furnace in order to burn in the asphaltum, which works as a resistance in an electrolytic denickeling bath into which the shells are then placed. The denickeling bath removes the nickel from the brass shells, except the matter to be printed, which is protected by the asphaltum. The type and pictures on the plate now stand in nickel, while the parts in between, being denickeled, show up in brass. The plates are passed through a water shower and are then dipped into an amalgamating bath containing a special solution of mercury salts. In this way the brass parts of the shells become amalgamated and thus resist the ink in printing, while the nickel does not accept the

*Hamburg, Germany. Paper presented at the second conference of technical experts, Washington, D. C.

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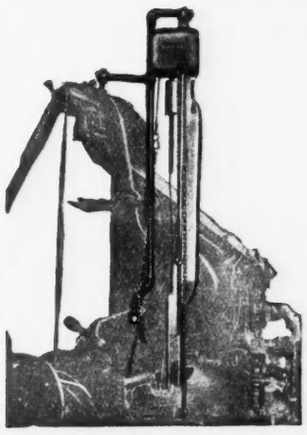

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amalgam and prints. The plates are now ready to be placed upon the plate cylinder of the printing presses.

The preparation of these plates, from the moment the form is ready until the shell is placed on the printing press, takes four minutes for the first shell, while another one follows every half-minute.

The Renck process permits the use of any kind of illustrations, like halftone or line-work, used either in the forms or as separate picture pages, in a much simpler way than hitherto used. For this purpose it does away entirely with etching. Instead of copying the negative of the picture on zinc, or copper plates, now used for etchings, the negatives are copied in exactly the same way on brass plates. These brass plates, instead of being etched, are dipped into an amalgamation bath, as already described, and can then be used on the transfer press as a form in exactly the same way as etchings.

For work other than daily newspapers, one can also make the printing shells, instead of on the transfer press, in the same manner as stated in the preceding paragraph, by copying the negatives of any kind of type or illustration matter, on thin brass sheets in the thickness of about 16 gage. Thereupon these brass sheets are put into an ordinary casting box, backed up with lead, bored, shaved, and beveled. After passing the amalgamation bath, they are ready for the printing press. The advantage of these backed-up plates over those prepared on the transfer press lies in the fact that these backed-up plates have the original printing matter on the surface and, therefore, print in the sharpest possible manner the same as from any original.

The printing with the transferred, or back-up, shells or plates on rotary or flat-bed presses takes place in the ordinary way as the printing with stereotypes or electrotype plates. The ink used is an ordinary printing ink, only somewhat heavier. The packing is somewhat harder than is generally used, and a slightly higher impression is necessary for the Renck method of printing.

In order to preserve the amalgam on the shells, it is necessary to spray mercury dust, with a spraying pistol driven by the machine, on one of the form rollers. This device sprays automatically every few thousand prints.

The reamalgamating of the plates during the printing can also be done by a second method, which is a roller device. This works as follows: The roller covered with moleskin is moistened with a neutralized amalgam solution and at certain intervals automatically touches the shells, thereby reamalgamating them. This roller device avoids any use of mercury. The spraying device, however, uses such a small quantity of mercury that there is no danger of exposure to poisoning, especially so, as the mercury will not be free but always sprayed from a closed vessel.

After printing an edition, the brass shells are denickeled and cleared of the subject matter printed,

and thereafter are ready for fresh impressions. The plates can be nickeled at any time and are usable over and over again.

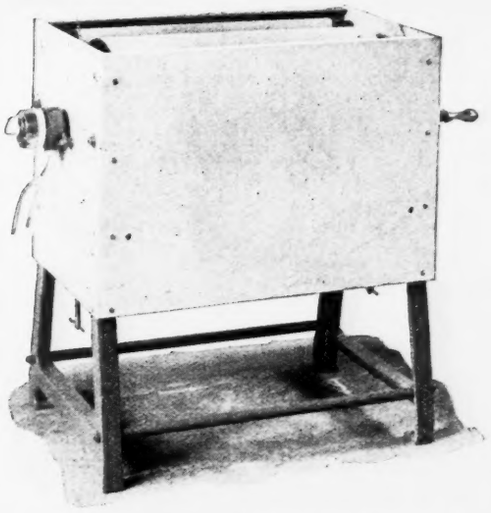
The chief advantages of the Renck process are these:

1. The making of matrices and stereos is eliminated.
2. All kinds of etching is eliminated. Instead of the etching, Renck uses the amalgamation bath which, for a whole picture page, takes one to two minutes, instead of several hours, for etching the different subjects.
3. Saving of the loss of stereotype-metal. The brass shells can be used over and over again.
4. Steel headings always remain sharp, as they are only used on the transfer press under a rubber blanket, instead of having matrices made from them.
5. No make-ready is necessary on the printing presses as the printing takes place from massive, plain and even shells.
6. The highest speed of rotary presses can be used, as printing takes place from an even surface. The printing becomes better the faster the machine is running. This applies to black printing as well as to color printing. In black printing, the fastest speed so far obtained is 34,000 an hour, from the color press 22,000.
7. The finest illustrations can be obtained on ordinary rotary presses, as a line-screen up to 133 points can be used There is no danger of filling up, as the printing is done fror an even plate and not from relief plates.
8. Any size edition can be printed from the same shell just the same as from electroplates, since the printing is als done from nickel. The nickel-plating can, of course, be dor in any thickness according to the size of the edition wante
9. A great saving is obtained with the ink. In print ing from plain shells only about 30 per cent of the amoun of ink is used, compared to what is necessary for relief plate printing.
10. By using higher screens, much better advertising printing and reproductions can be obtained.
11. The advantages for the 2, 3 and 4-color printing are especially important: (a) In avoiding the etching, and enormous amount of time and costly work is saved! (b) By avoiding the making of stereotype or electroplates, time and labor is saved and a great number of causes for lack of correct registering is eliminated. The Renck plates, being always the same ones, are bound to register correctly, quite the same whether they are made on the transfer presses or under the copying frames; (c) By avoiding the tooling out of the plates and the making ready on the presses, an enormous amount of time and labor is saved; (d) By using a screen up to 133 points on ordinary presses, and up to 150 points on higher quality presses, the best illustrations for supplements and magazines can be obtained; (e) The saving of time and labor makes it possible to use 2, 3, and 4-color work daily.
12. These savings of time, labor and material indicate that the Renck process is very much cheaper than ordinary printing. The exact calculation, of course, is dependent upon the various classes of printing.

The cost for a transfer press for the average-sized daily newspaper is about $2,000. The nickeling and denickeling bath is of ordinary type and can be used indefinitely just the same as the plates. The price for the mercury and the amalgamaton bath is so small as to be unimportant.

De Vinne's Influence

Theodore Low DeVinne was the first American printer of the nineteenth century to exercise much influence upon the art of printing. While not a fine printer, and particularly not over skilled in typography, DeVinne was noted for his presswork.—*The Linotype News.*



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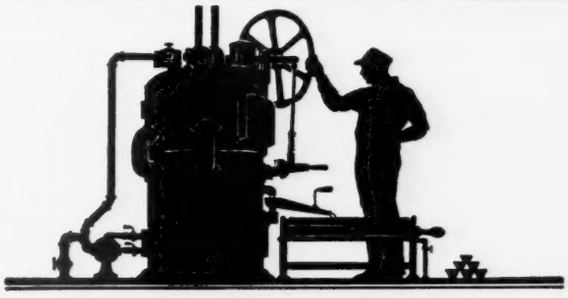

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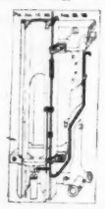

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